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# BOSTON'S INFRASTRUCTURE

Investment Record: 1978-1983 and Current Plans

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City of Boston  
Raymond L. Flynn, Mayor

Boston Redevelopment Authority  
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April 1984

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BOSTON'S INFRASTRUCTURE:  
AN ANALYSIS OF THE INVESTMENT RECORD, 1978-83, AND  
CURRENT PLANS OF THE CITY, STATE,  
SEMI-AUTONOMOUS AGENCIES AND UTILITIES

Anthony Artuso

Boston Redevelopment Authority  
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### City of Boston

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#### Boston Redevelopment Authority

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Boston Edison

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Boston Gas

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Cablevision

Dean Lanese

New England Telephone

Joseph Burke, Jr.

We wish to express our appreciation to all of the persons noted above, and to their agencies, and we look forward to the next stages of collaboration in Boston infrastructure planning and development.

Anthony Artuso



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## SUMMARY AND RECOMMENDATIONS: FUTURE INVESTMENT IN BOSTON'S INFRASTRUCTURE

### Findings

This report reviews the recent infrastructure investment activities and current plans of the City, State and semi-autonomous agencies and utilities responsible for Boston's infrastructure (see Tables 1 and 2). The principal finding of this report is that the total infrastructure investment needs of the City of Boston, including those portions of the infrastructure provided by the above-mentioned entities, are substantially in excess of the recent investment levels of these organizations. For the City agencies, the infrastructure needs over the next several years exceed \$120 million per year, one-half to two-thirds of which must be financed with City capital. For the State and semi-autonomous agencies, the total infrastructure needs in Boston or directly benefiting Boston were computed to be between one half and one billion dollars annually for at least the next five years. Approximately seventy percent of this investment can be expected to be federally funded. Finally for the five utilities, total annual capital investment in Boston over the next several years is expected to substantially exceed their \$60 million aggregate annual investment level of the recent past.

### Recommendations

A city and its environs is a complex and interconnected entity. What binds together the entity known as metropolitan Boston and allows economic and cultural life to thrive there is the region's infrastructure. The magnitude and importance of the infrastructure needs and

prospective infrastructure investments scheduled for or around Boston will have a profound influence on the future of the City and the region. Every effort should be made to marshal the resources for these investments, as well as coordinate, refine, and at times soften their effects, shaping them to truly benefit the populace for which they are intended. To this end, the following actions are being recommended.

- (1) For the City of Boston, an overall capital planning operation is urgently needed. This operation would be responsible for scheduling the City's own capital investment activities and for facilitating communication with state, semi-autonomous authorities and utilities on matters of infrastructure investment. The capital planning effort should be closely integrated with the City's overall planning functions, with the goal that infrastructure planning be carried out in relation to the needs and opportunities of the City's economy and its neighborhoods.
- (2) In the context of all infrastructure investment affecting Boston, there is a need for closer cooperation among the dozen and a half City, State, semi-autonomous agencies and utilities responsible for various aspects of Boston's infrastructure. The City's overall capital planning operation should play an important role in fostering this cooperation. Ongoing intergovernmental, public/private cooperation on infrastructure investment issues could be of assistance in the following ways.
  - (a) Improved planning for major infrastructure investments including coordination of supporting or complementary public and private investments.
  - (b) Maintenance of a comprehensive geo-coded list of past and planned infrastructure investments in Boston. Computer mapping of major projects would also be desirable. (The information which has been summarized in this report represents the beginnings of such a data base.)
  - (c) Liaison with the various national infrastructure planning initiatives which are emerging in response to the backlog of urban infrastructure needs.
  - (d) Investigation of innovative infrastructure financing arrangements.
  - (e) Exchange of information on new technological developments related to urban infrastructure.

- (f) Development of public and intergovernmental support for important infrastructure investments.

### Urgent Needs and Development Planning

Due to the decline in infrastructure investment in Boston that began in the late 1970s, the City and State, over the next several years, will of necessity be heavily engaged in infrastructure investments which respond to urgent and often well-defined maintenance, replacement and repair needs. However, if infrastructure investment is also to be used as a means of improving the quality of Boston's neighborhoods, directing the course of downtown development and expanding the range of opportunities available in Boston, a more comprehensive approach to infrastructure planning will be required. A strong capital planning operation on the part of the City, together with improved coordination of capital investment planning by City, State, semi-autonomous agencies and utilities, will increase the likelihood that infrastructure investment in Boston will respond to urgent needs as well as promote overall development plans and policies.

### The Present Opportunity

This report is being issued at a time of great need and great promise for the Boston metropolitan region. The State has recently approved its first capital budget in three years. Another is currently being considered. The Governor has submitted to the legislature a proposal to create a State-operated infrastructure financing entity known as MassBank. Legislation to create an independently financed regional sewer and water authority has also been recently submitted. Finally, after several years of forced abstinence, the City has recently

reentered the bond market. All of these developments are occurring amidst the environment of vigorous economic growth in the Boston region. The purpose of this report is to begin an infrastructure planning process that will help to realize the full benefits which these and other developments portend for Boston.



Table 1

SUMMARY OF INVESTMENT IN BOSTON'S INFRASTRUCTURE<sup>1</sup> 1978-83  
(\$000's)

	1978	1979	1980	1981	1982	1983
<b>Investments by City Agencies<sup>2</sup></b>						
Improvements to Public Ways	3,798	9,542	11,108	5,855	1,675	3,576
Renovation of Park and Recreation Facilities	2,297	3,402	3,616	3,109	700	914
Construction and Renovation of Hospital, School, and Other Municipal Buildings	37,853	29,587	21,989	3,074	5,495	13,027
Infrastructure for Community, Economic and and Industrial Development	7,689	21,025	10,634	12,266	8,610	16,030
Sub-total City	51,637	63,556	47,347	24,304	16,480	33,547
<b>Investments by State Agencies and Semi-Autonomous Agencies</b>						
Highways and Bridges	19,100	9,267	7,396	17,855	16,516	6,208
Mass Transit	305,279	314,883	340,150	331,682	309,533	279,500
Port Facilities	78,073	8,905	10,355	43,044	49,672	17,006
Economic Development Sites	4,265	1,454	3,007	5,368	10,674	12,372
Park and Recreation Facilities	NA	9,608	2,065	727	1,720	176
Regional Water and Sewer System	NA	363	766	891	533	6,479
Sub-total State & Semi-Autonomous	406,717+	344,480	360,732	399,567	388,648	321,741
<b>Utility Investment</b>						
Boston Water and Sewer	NA	6,512	7,604	6,280	7,825	10,519
Telephone, Gas, Electric	55,000	55,000	55,000	55,000	55,000	55,000
Cablevision	-	-	-	-	-	40,000
Sub-total Utility	55,000	61,512	62,604	61,280	62,825	105,519
Total Investment in Boston's Infrastructure	513,354+	469,548	470,683	485,151	467,953	427,260
<b>Funding Analysis:</b>						
58% Federal						
15% State (including MDC and MBTA bonds)						
9% Semi-Autonomous Authorities (including BWSC)						
5% City						
13% Utilities (except BWSC)						

<sup>1</sup> Investments are grouped according to the organization which managed the investment.

<sup>2</sup> Includes the BRA and EDIC.

Table 2

CURRENTLY IDENTIFIED INVESTMENT NEEDS OF BOSTON'S INFRASTRUCTURE\*  
(\$'000's)

	1984	1985-87	1988-89+	Currently Unscheduled
<u>City Agencies<sup>1</sup></u>				
Streets, Sidewalks and Lighting	19,711	38,400	NA	-
Park and Recreation Facilities	3,777	14,500	NA	-
Hospitals, Schools and Other Municipal Buildings	18,349	239,600	NA	-
Infrastructure for Community, Economic and Industrial Development	20,200	76,500	NA	-
Sub-total City Agencies	62,037	369,000	NA	-
<u>State Agencies and Semi-Autonomous Authorities</u>				
Highways and Bridges	122,500	52,400	11,000	2,216,500
Mass Transit	310,500	1,350,100	1,093,500	-
Port Facilities	60,000	35,000+	35,000+	100,000
Economic Development Sites	28,620	160,000+	NA	-
Park and Recreation Facilities	10,500	32,500	5,000	-
Regional Water and Sewer System	44,900	306,000	346,800+	1,500,000
State Buildings	NA	41,600	NA	10,000+
Sub-total State and Semi-Autonomous Authorities	577,020	1,977,600+	1,481,400+	3,826,500+
<u>Utilities</u>				
Boston Water and Sewer	30,885	58,500+	NA	-
Telephone, Gas, Electric	NA	750,000	NA	40,000
Cable Television	60,000	NA	NA	-
Sub-total Utilities	90,885	808,500+	NA	40,000
Total Currently Identified Investment Needs	729,942	3,155,100+	1,481,400+	3,866,500

<sup>1</sup> Approximately 17 million in Federal and State funding for reconstruction of City Streets is listed in this table under State Highway and Bridge work.

\* See tables 17, 29, and 30-33 for description of investments and analysis of prospective funding sources.



## INTRODUCTION

### Role of Infrastructure

Boston's infrastructure not only sustains the basic economic, cultural and residential activities of the City, but is a prime determinant of the quality and location of these activities. For example, the location and condition of roads, bridges and transit facilities strongly affects business and residential investment decisions. The proper combination of street, sidewalk, park, and public facility improvements can revive or sustain a neighborhood. The capacity and quality of sewage collection and treatment facilities can serve to limit or promote waterfront development and water-related activities. Marine and airport facilities, cultural, sports and convention centers, public schools, hospitals and health centers, all of these parts of Boston's infrastructure exert a large influence on the life of the City.

### The Historical Context

These generalized observations on the importance of Boston's infrastructure are illustrated in much more concrete form by the history of Boston in this century. The historical record indicates that infrastructure investment in Boston, or the lack of it, has been a key factor in the changing fortunes of the City over the last fifty years or more.

Long after the rest of the nation had begun to recover, Boston remained in the throes of the Great Depression. By 1956, Boston's net funded debt had sunk to a level less than half that of a quarter century

earlier. This decline in public investment was paralleled by a virtual halt in new private investment. From 1930 to 1960, only one major office building or hotel was constructed in the City.

The early 1960s marked the first stages of the shift to a services-oriented national economy. This shift, together with an expanded federal urban renewal program and enactment of Massachusetts' 121A legislation, provided the impetus for a renewal of public and private investment in Boston. By the late 1960s, the City's level of public investment had increased dramatically. The average annual level of city-funded capital investment between 1968 and 1977 was more than double the average annual level of the preceding thirty years. Private investment between 1968 and 1977 also rose sharply, reaching a peak of over \$700 million in 1975. These increases in public and private investment had begun to yield their benefits in the form of expanding employment in Boston since 1976.

A new decline in city-funded public investment began in the late 1970s and, after the passage of Proposition 2½, the decline became a virtual halt. In the late 1970s, the level of state- and federally-funded public investment in Boston also began to decline. With some important exceptions, particularly mass transit and port facilities, the result was a decay in Boston's infrastructure during this period or a postponement of important new public investments.

In response to the growing backlog of infrastructure investment needs and a new public determination to do something about them, a resurgence of city- and state-funded public investment in Boston began at the end of 1983 and shows every sign of accelerating through 1984. If several new infrastructure financing and planning initiatives are

successful, the level of publicly-funded capital investment in Boston could increase substantially through the remainder of the decade and beyond. The revival of public investment that is underway is matched by the continued strong performance of Boston's private economy. Private investment in Boston is expected to exceed \$1.4 billion in 1984 and continue to be strong throughout the 1980s.

#### Investment, Public and Private, and the City's Economy

The recent record of public and private investment relative to the City's overall economic performance is summarized in Table 3. As can be seen, public investment measured in constant dollars declined steadily after 1978, both in absolute terms and as a percentage of gross city product. Assuming that financially sound and publicly supported programs can be developed at the City and State level, public investment is projected to increase substantially not only in 1984, but through at least 1987. Although the trends in private investment do not exactly coincide with those of public investment, private investment also showed some decline in the late 1970s, following a peak in 1975. However, the continued transformation and growth of the City's economy, the ability and willingness of developers to finance necessary infrastructure investments, and the impetus of earlier public investments contributed to the resurgence of private investment early in the 1980s. Another important point to note is the extremely high level of private investment scheduled for 1984 and after.

The net result of these projections of public and private investment is an optimistic outlook for the economy of the City, the quality of its neighborhoods and the range of opportunities available to

Table 3

PUBLIC AND PRIVATE INVESTMENT IN BOSTON RELATIVE TO  
GROSS CITY PRODUCT  
(In Millions of Constant 1983 Dollars)

Year(s)	Boston Gross City Product <sup>1</sup> (GCP)	Private Investment <sup>2</sup>	Public Investment <sup>3</sup>	Private & Public Investment	Private Investment As % of GCP	Public Investment As % of GCP	Public & Private Investment As % of GCP
1978	15,607	305	658	963	2.0	4.2	6.2
1979	16,125	189	541	730	1.2	3.4	4.6
1980	16,495	241	502	743	1.5	3.0	4.5
1981	16,423	878 <sup>4</sup>	473	1,351	5.3	2.9	8.2
1982	16,160	445	428	873	2.8	2.6	5.4
1983	16,516	657	362	1,019	4.0	2.2	6.2
Projected							
1984	16,776	1,540	686	2,226	9.2	4.1	13.3
1985-87	51,078	2,231	2,406	4,637	4.4	4.7	9.1

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- 1 Estimates of Gross City Product drawn from unpublished memo, Gregory Perkins, BRA Research Department. Estimates of GCP after 1983 based upon employment projections and 1983 average gross product per worker.
- 2 Estimates of private investment drawn from BRA Research Department computer file, maintained by John Avault. Investment figures do not include private equipment purchases, land acquisition or financing costs. However estimates of private utility investments in Boston plant and equipment have been added.
- 3 Public investment includes best estimate of City, State, and semi-autonomous investments in Boston. Also, in the case of the MDC and MBTA, includes some investments outside of Boston that will have significant benefits for the City.
- 4 1981 estimate of private investment includes \$372 million for the Harvard Medical Area Total Energy Plant (MATEP). Without this investment private investment as a percent of GCP drops from 5.3 to 3.1 percent.

Revised 5/3/84

its citizens. However, the full benefits of the prospective public and private investment in Boston will only be realized through an open, imaginative, and coordinated planning effort. Infrastructure investment considerations will of necessity be a central element in this planning effort.

### Focus of This Report

The information contained in this report provides a comprehensive picture of the recent investment activities and future plans of the City, State, semi-autonomous agencies and utilities responsible for Boston's infrastructure. The presentation and analysis of this information, with respect to infrastructure investment needs, availability of funding and coordination of plans is only a first step toward a more comprehensive and coherent approach to infrastructure investment in Boston.

### Organization of the Report

The report begins with a discussion of the past investment in and future needs of the infrastructure owned by the City of Boston. The discussion has been divided according to the major categories of infrastructure, but past investment levels and, in most cases, future plans are generally presented by agency. Where appropriate, possible funding sources are discussed under each agency. A summary of the known investment needs of the City's infrastructure is presented at the beginning of the section along with a brief discussion of the degree to which the City's fiscal outlook and borrowing power matches its capital investment needs.



The analysis of the City's investment record and needs is followed by an examination of the relevant portion of the investment activities of the State and semi-autonomous agencies. This portion of the report includes summaries of the authorizations in the State's fiscal 1984 and proposed 1985 capital budgets which pertain to Boston, summaries of Massachusetts Department of Public Works highway and bridge activities in Boston, and of those portions of the MDC's, MBTA's and MassPort's infrastructure expenditures and plans which affect Boston.

The third section of the report presents the recent investment record and future capital programs of the five utilities serving Boston, which are the Boston Water and Sewer Commission, Boston Gas Company, Boston Edison, New England Telephone and Cablevision.

I. RECENT HISTORY AND FUTURE OUTLOOK FOR CITY OF BOSTON  
INFRASTRUCTURE INVESTMENT

Summary

The latter years of the 1970s marked the end of Boston's most recent infrastructure investment boom. The passage of proposition 2½ in 1980 brought a sharp reduction in City-funded capital improvements. At about the same time, federal funding for the BRA's extensive urban renewal programs in the South End and Charlestown was drawing to a close. In addition, the major portions of the City's hospital and school construction programs had also been concluded by the end of the 1970s. All these factors combined to cause a very low level of infrastructure investment by the City in the early 1980s. In virtually every category of infrastructure, from recreational facilities to industrial parks, the level of investment was insufficient to prevent deterioration or satisfy identified needs. If it were not for the continued flow of federal community and economic development grants to Boston, the level of capital investment undertaken by the City's agencies in the early 1980s would have been even more dismal than it was. The City's infrastructure investment record from fiscal 1978-83 is summarized in Table 4.

With the sale of \$30 million in general obligation (GO) bonds in the fall of 1983, quickly followed by the sale of \$25 million in bond anticipation notes (BANs), the City took the first steps toward ending almost four years of drought in infrastructure investment spending. A portion of these funds was used to pay for the deficit in the City's

Table 4

**SUMMARY OF INFRASTRUCTURE INVESTMENT BY CITY AGENCIES, 1978-83**  
(\\$000s)

	Department(s)	1978	1979	1980	1981	1982	1983
Improvements to Public Ways	BPWD	3,798	9,542	11,108	5,855	1,675	3,576
Renovation of Park and Recreation Facilities	BPRD, PFD, NDEA	2,297	3,402	3,616	3,109	700	914
Hospital Construction and Renovation	PFD, HHD	7,353	2,260	2,590	1,117	3,972	8,544
School Construction and Renovation	PFD, BSD	29,200	25,384	13,983	200	400	2,433
Other Municipal and County Buildings	PFD	1,300	1,943	5,416	1,757	1,123	2,050
Infrastructure for Community and Economic Development	BRA, NDEA	5,242	19,099	9,919	7,136	5,910	2,700
Infrastructure at Industrial Parks	EDIC	2,447	1,926	715	5,130	2,700	13,330
		<u>51,637</u>	<u>63,556</u>	<u>47,347</u>	<u>24,304</u>	<u>16,480</u>	<u>33,547</u>

Funding Analysis: 30% Federal  
22% State

42% City Bonds

2% Trust Funds and Departmental Revenues

1% Syndication Proceeds at Boston Army Base

3% Industrial Revenue Bonds at EDIC Industrial Parks

1 Hospital Construction and Renovation includes major equipment purchases.

2 Infrastructure for Community and Economic Development includes among other things substantial expenditures for reconstruction of streets and sidewalks and new park construction.

3 Infrastructure at Industrial Parks includes a substantial amount of investment in buildings which EDIC leases to private firms.



capital fund which had accumulated over the past several years. The remainder was allocated towards street improvements, school and public building renovations and various urban renewal projects.

The sale of the BANs and the GO bonds along with the recent sale of the Government Center garage has allowed the City to at least begin the investment program needed to both renovate its capital stock and promote economic and community development. However, at first glance, the City's capital investment needs seem almost overwhelming. Table 5 (Part A) presents the total level of funding that would be needed through 1987 to both substantially remove the City's backlog of infrastructure investment needs as well as carry out important economic development projects. As the table indicates, over \$140 million would be required in fiscal year 1985, another \$130 million in 1986, and probably at least that much in fiscal 1987. This level of investment could be reduced to somewhere between \$100 and \$110 million per year if the requisite improvements to the City and County buildings are stretched out over a five-year, rather than a three-year period.

Glancing at the investment categories in Table 5 (Part A), it can be seen that there are no frivolous items on this capital improvement agenda. Included in this summary of infrastructure needs are funds to begin repairing Boston's crumbling streets, court-ordered capital improvements to the County's correctional facilities, a backlog of repair and reconstruction needs in the City's schools, hospitals and other buildings, renovation of the County's decaying courthouses, infrastructure for urban renewal and general economic development, and capital investments necessary to maintain and expand Boston's remaining manufacturing base. Table 5 (Part A) also shows that without

Table 5

CITY AND COUNTY INFRASTRUCTURE INVESTMENTS UNDERWAY, REQUIRED AND PROPOSED  
(\$000's)

Purpose/Type	1984	1985	1986	1987
<u>Part A, Total Investments</u>				
Improvements to Public Ways	19,711	14,950	11,700	11,700
Park and Recreation Improvements	3,777	4,702	5,000	4,800
Hospital Construction and Renovation	5,139	5,800	23,700	27,500
School Construction and Renovation	8,210	27,757	25,400	25,400
Charles Street Jail and Deer Island Prison	-	25,000	17,000	17,000
County Court Buildings	400	4,000	4,000	4,000
Other Municipal Buildings	5,000	15,000	15,000	15,000
BRA Economic Development and Urban Renewal	30,096	40,314	23,360	NA
NDEA Infrastructure Investments	920	*	*	*
Infrastructure at EDIC Industrial Parks	72,353	6,600	6,600	6,600
		144,123	131,760	112,000

\* Allocation of \$15-20 million/yr. in CDBG Funds currently unspecified.

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Part B, City-Funded Investments<sup>1</sup>

Improvements to Public Ways	18,000	13,250	10,000	10,000
Park and Recreation Improvements	552	2,820	3,000	2,880
Hospital Construction and Renovation	4,639	5,800	23,700	27,500
School Construction and Renovation	4,926	11,100	10,200	10,200
Charles Street Jail and Deer Island Prison	-	7,000	7,000	5,000
County Court Buildings	0	0	0	0
Other Municipal Buildings	5,000	15,000	15,000	15,000
BRA Economic Development and Urban Renewal	8,596	11,764	4,560	NA
NDEA Infrastructure Investments	0	0	0	0
Infrastructure at EDIC Industrial Parks	0	3,000	3,000	3,000
	36,713	69,734	76,460	73,580

- <sup>1</sup> See Tables 2 through 16 for explanation of needs and funding arrangements for particular investment categories.
- <sup>2</sup> Assumes future NDEA infrastructure expenditures continue to be funded solely with CDBG funds.
- <sup>3</sup> Assumes a doubling in the percentage of EDIC infrastructure investments financed from City bonds.

substantial federal and state assistance Boston cannot hope to undertake a capital investment program which attends to all its urgent infrastructure needs. However, if the State does pass pending legislation to assume responsibility for the County court buildings and, as requested by the City, provides the majority of the funds needed to replace the Charles Street Jail and renovate the Deer Island Prison, then the City may indeed be capable of undertaking a comprehensive capital investment program.

Assuming the State does provide funding for improvements to the County's courts and correctional facilities and assuming the percentage of federal and state funding continues at close to historic levels for schools, parks and economic development, then the City's share of its infrastructure investment needs would be as shown in Table 5 (Part b). It is estimated that approximately \$37 million in City funds will be expended or encumbered in fiscal 1984. Another \$70-75 million will be required annually for fiscal years 1985-87. This could be reduced to perhaps \$55-60 million if the City's building improvements are stretched out over five years instead of three.

As mentioned, \$55 million in bond anticipation notes (BANs) and general obligation bonds have been issued in fiscal 1984. Another \$55 million bond issue is currently being prepared. Out of these bond proceeds, approximately \$28 million was used to pay for the capital fund's existing deficit, with the remainder allocated to new capital investments. Another \$22 million, in what was originally earmarked for capital purposes, also became available from the sale of the Government Center Garage. An additional \$42 million is expected from the sale of three other City-owned garages. Although various capital investments

were originally recommended as the proper use of these garage proceeds, it is still unclear exactly what portion will be used for capital investment and what portion will be allocated to cover operating deficits. Assuming one-half of these garage sale proceeds are set aside for infrastructure investments, then together with the FY84 bond proceeds, the City is likely to require an additional \$50-60 million/year in City capital funds through fiscal 1987. This assumes that the bulk of the capital investment needs shown in Table 5 (Part B), including the very substantial backlog in building repair and replacements, will be attended to over the period FY1985-87. If this were achieved, Boston's capital requirements could decrease after 1987.

It is still very much an open question as to what level of general obligation bonds the City can afford to issue each year. In the years following Boston's mini-fiscal crisis of 1976, a ceiling of \$55 million was set for annual bond issues. The rationale at the time was that this level of new issues would approximately match the amount of bonds which Boston was retiring each year. With the City's reentrance into the bond market in fiscal 1984, the assumption of a \$55 million annual ceiling on new debt was still held by many City officials. More recently, the capital budgeting and debt management sections of Mayor Flynn's fiscal transition team report called for the evaluation of \$65-70 million in annual City capital expenditures. If Boston's current bond issue is successfully marketed, the City's FY84 long-term borrowing will total \$85 million.

For purposes of illustration, Table 6 shows the annual debt service through 1989 that the City would have to pay on its current \$55 million bond issue plus \$50 million in new bonds issued in 1985, \$60 million in

Table 6

NEW, TOTAL AND NET ADDITIONAL DEBT SERVICE RESULTING FROM MAJOR CAPITAL IMPROVEMENT PROGRAM  
(\$'000s)

Year	Face Value of New Bonds Issued	Annual Debt Service on Bonds Issued After Jan. 1, 1984	Debt Service On Outstanding GO Bonds	Total Debt Service	Annual Net Increase in Debt Service	% Change In Debt Service
April-June 1984	55,000*	1,000	73,264	74,264	1,000	
FY 1985	50,000**	12,333	71,977	84,310	10,046	13.5%
FY 1986	60,000**	19,381	70,679	90,060	5,750	6.8%
FY 1987	60,000**	26,429	67,060	93,489	3,429	3.8%
FY 1988	50,000	32,302	64,361	96,663	3,174	3.4%
FY 1989	50,000	38,175	61,416	99,591	2,928	3.0%

\* \$55 million bond is currently being prepared by the City. It is expected that \$25 million will be used to retire Boston's outstanding Bond Anticipation Notes.

\*\* Additional capital funds of \$15 million are assumed for both FY86 and FY87 from the sale of City-owned garages.



both 1986 and 1987, and \$50 million thereafter. It is assumed the bonds would be issued for twenty years with constant annual debt service payments at an interest rate of ten percent.\* Also shown in Table 6 is the debt service that will be due through 1989 on Boston's outstanding general obligation bonds. As can be seen from the table, the bond issue currently being prepared together with the issuance of new bonds at a level sufficient to expeditiously satisfy Boston's backlog of capital investment needs would raise the City's general debt service payments by approximately \$10.0 million in 1985, \$5.8 million in 1986 and progressively smaller sums thereafter.

Table 6 is not intended as a firm recommendation regarding the level of new bonds that the City should issue. Indeed, the nature of State assistance for school improvements could require a greater level of new bond issues on the part of the City than Table 6 would indicate. However, the additional debt service that would result from this increased level of school bonds would be matched by State reimbursements. On the other hand, the proceeds of surplus hospital properties sold in order to finance new construction at BCH or an increase in the capital funds made available from garage sales would reduce the level of bonds the City would be required to issue. What Table 6 is intended to illustrate is that to quickly renovate and improve the City's capital stock will require a significant but not unreasonable rise in the City's debt service payments.

The FY1985 budget request recently submitted by the Mayor essentially contains a \$40-45 million deficit that is to be offset by

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\* The City's last bond issue was structured so that debt service was highest in early years. Given the City's current fiscal outlook, it would be more advantageous for new bonds to be structured with flat or ballooning debt service payments.

garage sale proceeds and, it is hoped, also by a new parking tax. Without the benefit of additional new revenue sources, the City may also find itself facing a significant deficit in FY1986. However, the State legislature's attitude toward the parking tax, and other new revenue sources which have been discussed by the Flynn Administration, is yet to be tested. In general, Boston's uncertain fiscal outlook may force the City to make some difficult choices with respect to infrastructure investment.

One infrastructure investment option would be to adopt a conservative wait and see attitude, issuing just enough bonds to keep debt service constant until the City's fiscal outlook brightens substantially. The price of this course of action would be continued decay of City buildings and streets and minimal investment in infrastructure for economic or community development. The second alternative would be to embark upon the long delayed capital investment program (CIP) outlined in Tables 5 and 6, while cutting back on the rate of growth in operating expenditures in order to finance the increased debt service costs which this CIP would entail. Although reducing the rate of growth in the operating budget is likely to have an immediate impact on the level of City services, it should be realized that Boston is already suffering the costs of deferred infrastructure investments. The final option the City could choose to pursue would be to submit to the voters the choice of exempting from the limitations (on the property tax levy) imposed by Proposition 2½, some or all of the debt service that would be required to carry out the City-owned infrastructure investments outlined in this report. Considering that these infrastructure investments include streets, parks and recreational

facilities, schools, hospitals, and infrastructure for economic development, the City's electorate could conceivably be in favor of raising the property tax levy to pay for the debt service resulting from such investments.

#### Recommendations

If Boston is indeed to embark upon anything more than a cautious wait and see capital investment effort, it must quickly improve its capacity for capital planning and budgeting. A process must be developed which can properly define, schedule and coordinate needed capital improvements. The recommendation by the Mayor's fiscal transition team calling for the creation of an office of capital planning and budgeting underscores the importance of such an effort. The tasks and responsibilities involve the review and coordination of the capital spending plans of the City's agencies, with the end product being a unified annual capital budget for the City. All this must occur within the framework of planning and development for the City as a whole. The capital planning operation should also maintain liaison with the State, its agencies and semi-autonomous authorities, as well as with the utilities. Finally, as the City's annual capital budgets and longer-term capital programs are being formulated, there must be ample opportunity for public input and review.

In order to be truly effective at the tasks outlined above, the capital planning effort must be an integral part of the Mayor's policy and planning role, involving an objective, comprehensive view of the City's capital investment needs in relation to its fiscal position. For these reasons, the capital planning effort should be closely related to



the City's planning and fiscal policy functions. The office must also work closely with the City's infrastructure planning agencies and with other related agencies of City government. Personnel with skills and background in planning, public finance, computer information systems and project management will be needed. In time, formal and informal channels should emerge by which the City's planning, development, public works, public facilities, budgeting and treasury departments can become engaged in both developing the City's annual capital budget and defining long-term goals.

The body of information which is summarized in this report lays the foundation for the development of an analytic data base for capital planning. The information that has been obtained together with the format in which it has been compiled will be particularly useful in developing coordinated capital investment programs for particular neighborhoods of the City as well as the Downtown. However, this report has also identified many important infrastructure planning tasks which will require further attention by the proposed effort in capital planning. The most pressing of these tasks are:

- 1) Development of a formalized annual capital budgeting process, combining the participation of the City's departments with public input and review. A survey of the capital planning/budgeting processes of other major cities would be especially useful in this regard.
- 2) Development of a central computer information system which can be used to maintain records on infrastructure conditions and infrastructure investment, past, present and planned, as well as funding source and contract data. In order to improve the spatial coordination of infrastructure investment, this new information system should be designed to interface with the computer mapping system, Intergraph, which the City has recently purchased.
- 3) Ongoing investigation and analysis of infrastructure financing options. Investigation of innovative financing alternatives is especially relevant with respect to the capital investment

activities of NDEA, EDIC, the BRA and the Health and Hospitals Department. With regard to general obligation bonds, the annual debt capacity of the City, the use of dedicated revenue streams, flat or ballooning repayment schedules and new marketing techniques are a few of the issues which deserve investigation.

- 4) Revival and rebuilding of the capacity for neighborhood planning and corresponding infrastructure investments.
- 5) Comprehensive analysis of the interaction between infrastructure investment and alternative development options for Central Boston.
- 6) Development of a comprehensive capital improvement program for the City's schools in order to improve educational opportunities and guarantee continued state funding for school capital improvements.
- 7) Review of the capital improvement options at the City's hospitals, including construction of a new building at BCH and possible disposition of surplus properties at Mattapan and Long Island Hospitals.
- 8) Review of forthcoming report by PFD on capital investment needs of municipal buildings.
- 9) Continued lobbying of the State regarding funding for the Charles Street Jail reconstruction and Deer Island Prison improvements, as well as the assumption of responsibility for the Suffolk County Court buildings.
- 10) Ongoing involvement of the City in the reuse planning for the Boston State Hospital site.
- 11) Investigation of the possibility of expediting state and federal bridge reconstruction funding by using City funds to perform engineering and design costs.
- 12) Analysis of the feasibility and potential benefits of constructing a City-owned data transmission system in parts of Central Boston.
- 13) Review and decision regarding proposed City contract with private owner/operator of planned waste-to-energy facility.

City Streets and Bridges

Maintenance, repair and reconstruction of City-owned streets, sidewalks, street lights and to a lesser extent City-owned bridges is primarily the responsibility of Boston's Public Works Department (PWD). The record, since 1978 of PWD's capital investment activity in each of these areas is presented in Table 7. As can be seen from the table, investment in street repair and reconstruction, which often includes sidewalk and lighting work, was relatively low in 1978, increased significantly during 1979 and 1980, only to drop off dramatically after the imposition of Proposition 2½. Meetings with PWD personnel have indicated that prior to fiscal 1984 the rate of street reconstruction had slowed to the point that each street would be reconstructed only once every eighty years. The Department's capital improvement program for years 1984-86, shown in Table 8, is expected to reduce the street reconstruction rate to perhaps once every sixty years. Ideally, streets should be reconstructed approximately once every forty years. This however would require an annual expenditure of over \$15 million in City capital for street reconstruction, which is \$5 million more than PWD expects to receive from the City in the foreseeable future.

In addition to PWD's own street improvement efforts, significant amounts of street and sidewalk reconstruction work have been administered or funded by the Boston Redevelopment Authority (BRA) and the Neighborhood Development and Employment Agency (NDEA). In the past, the BRA's extensive street improvement work has been primarily concentrated in the Urban Renewal areas of the South End and Charlestown, but has also included the Charlestown Navy Yard and parts

Table 7  
CAPITAL EXPENDITURES OF BOSTON PUBLIC WORKS<sup>1</sup> DEPARTMENT, 1978-83  
\$000's

Expenditure Type	Neighborhood(s)	Fiscal Year				
		1978	1979	1980	1981	1982
Reconstruction of Public Ways <sup>2</sup> (including streets, sidewalks and lighting work)	City Proper	388	759	1,748	561	0
	Dorchester, Mattapan	1,253	1,999	3,466	1,287	1,006
	Charlestown	0	60	0	0	0
	W. Roxbury, Roslindale	156	1,949	116	1,276	114
	Roxbury, Jamaica Plain	0	1,029	517	0	164
	Hyde Park	0	523	0	134	0
	Allston/Brighton	536	140	927	133	0
	East Boston	130	410	706	482	0
	South Boston	0	255	1,047	0	0
	Sub-total--Reconstruction		2,565	7,124	8,527	3,873
Street Construction	Hyde Park, Brighton		220			
Asphalt Resurfacing <sup>2</sup>	City-wide	574	1,488	1,761	424	0
Street Repairs <sup>2</sup>	City-wide	141	150	0	403	180
Sidewalk Repairs <sup>2</sup>	City-wide	374	403	614	896	0
Bridge Repairs	City-wide	144	157	206	259	211
Total BPWD Capital Expenditures		3,798	9,542	11,108	5,855	1,675

Source: BPWD Annual Reports, 1978-1982, Contract Reports 1983.

- <sup>1</sup> It should be noted that substantial additional investment in new public ways and lighting were undertaken by the BRA in the South End, Fenway, and Charlestown. Additional street reconstruction was also carried out in the neighborhood business districts by the BPWD on behalf of the NDEA. (See Tables 4 and 5.)
- <sup>2</sup> Expenditure figures for reconstruction of public ways, asphalt resurfacing and street and sidewalk repairs are a record of the contracts completed in each fiscal year.

Funding Analysis 1978-83: 8,879 or 25% Federal;  
(\$000s) 2,963 or 8% State;  
23,521 or 67% City.

Table 8

CAPITAL INVESTMENT PROGRAM BOSTON PUBLIC WORKS DEPARTMENT,  
1984-86

Type of Project	PWD District	Neighborhoods	1984	1985	1986
Total Street Reconstruction <sup>1</sup>					
	01	Central Boston, Charlestown	405		
	02	Jamaica Plain	914		Street by street
	03	No. Dorchester	3,388		programming of
	04	Allston/Brighton	123		expenditures not
	05	South Boston	304		yet completed
	06	West Roxbury	1,683		
	07	So. Dorchester, Mattapan	545		
	08	Hyde Park	2,450		
	09	East Boston	297		
	10	Roxbury	2,000		
			<u>12,111</u>	<u>11,700*</u>	<u>11,700*</u>
Original Construction <sup>2</sup>		Various	1,100	-	-
Sidewalk Reconstruction only		Citywide	1,750	2,000	-
Asphalt Resurfacing		Citywide	<u>4,750</u>	<u>1,250</u>	<u>-</u>
Total PWD Capital Program			19,711	14,950	11,700+

\* \$10.0 million expected from City funds; \$1.7 million from State Aid. Approximately 50% of the 1985 and 1986 street reconstruction programs have already been identified on a street-by-street basis.

<sup>1</sup> Total Street Reconstruction often includes sidewalk reconstruction and installation of underground lighting conduits, as well as the reconstruction of the road bed.

<sup>2</sup> Original construction usually involves the upgrading of small private ways into public streets.



of the downtown and Roxbury. In the future the BRA will continue to oversee a wide range of street improvement projects in various parts of the City. NDEA's street improvement work has been much less extensive than that of the BRA, with the investment being concentrated in a few neighborhood business districts.

Massachusetts Department of Public Works (MDPW) records have the City of Boston listed as the full owner of 45 vehicular bridges. In 1979 a consultant to Boston's Public Works Department inspected 33 of these bridges as well as twelve pedestrian bridges. The consultant's final report, dated October, 1980, indicates that nineteen vehicular bridges and five footbridges were found to have live load capacities below the minimum requirements established by the MDPW. These deficient bridges, together with the repair costs estimated in Universal Engineering's 1980 report, are listed in Table 9.

Although the 1980 Universal report showed that many of the City's bridges were in poor condition, the City has in the past few years spent only minimal sums on bridge repairs (see Table 7). However, all of the vehicular bridges which the City owns are eligible for some form of federal and state funding. Two of the deficient City bridges listed in Universal's report have been or are being reconstructed with state and federal fund. Another, the Northern Avenue Bridge is currently scheduled by MDPW for reconstruction in 1986. Since it is MDPW which is responsible for approving bridges for state and federal funds, a full discussion of bridge conditions and reconstruction work will be discussed later in relation to the activities of that Department. It should be mentioned here however, that MDPW will expedite bridge reconstruction funding in cases where the owner has completed the

Table 9

1980 CAPACITY RATINGS AND  
ESTIMATED REPAIR COSTS OF BRIDGES FOUND TO HAVE DEFICIENT LIVE LOAD CAPACITY

	1980 Rating of Live Load Capacity <sup>1</sup>			Estimated Repair Cost (\$000s)
	Type of Vehicle			
	H20	3	3S2	
Vehicular Bridges				
Hyde Park Ave. over Mother Brook	0.0	0.0	0.0	54
Summer St. over C St.	0.0	0.0	0.0	325
Charlestown Bridge over Charles River	0.5	0.7	0.9	321
Massachusetts Ave. over Huntington Ave.	4.2	5.0	8.0	42
Adams St. over Neponset River	5.0	9.3	14.7	270
Reservation Rd. over Mother Brook	(Reconstruction completed by MDPW in 1981)			
Summer St. over B St.	7.4	9.8	14.4	560
Northern Ave. over Fort Point Channel <sup>*</sup>	8.9	12.4	19.0	11,000
Summer St. over A St.	10.5	12.3	18.9	170
Broadway over Fort Point Channel	11.4	15.4	22.3	755
Summer St. over Fort Point Channel	12.0	19.2	28.6	1,106
Congress St. over Fort Point Channel	13.4	20.4	29.1	415
Chelsea St. over Chelsea River	(Reconstruction underway by MDPW)			
American Legion Highway over Morton St.	15.6	17.5	24.3	200
Massachusetts Ave. over Penn Central	(Has since been demolished)			
Bennington St. over MBTA	18.0	32.5	51.4	21
Saratoga St. over Belle Isle Inlet	18.5	18.0	20.9	545
Ipswich St. over Muddy River	18.9	22.3	35.2	135

1980 Live Load Rating<sup>2</sup>

<b>Pedestrian Bridges</b>	
Glenwood Ave. Footbridge	63 p.s.f.
B St. Footbridge	64 p.s.f.
Butler St. Footbridge	67 p.s.f.
Toll Gate Way Footbridge	71 p.s.f.
Jones Avenue Footbridge	75 p.s.f.

\* Reconstruction scheduled by MDPW for 1986.

1 MDPW rating guidelines establish minimum live load requirements of 20 tons, 25 tons and 36 tons for type H20, type 3 and type 3S2 vehicles, respectively.

2 Minimum desired live load capacity for footbridge is 85 p.s.f.

necessary engineering and design work. The BPWD and the BRA have in the past captured a greater share of state and federal highway funds by performing the necessary design work themselves. Considering the high percentage of deficient City-owned bridges, the City should perhaps try to do the same with respect to bridge repair funds.

A final point with respect to bridges is that in addition to the 38 bridges which the City of Boston owns in toto, there are approximately another 34 in which the City shares ownership with the state. These are generally bridges which carry City streets over railroads. Chapter 634 permitted cities and towns to transfer ownership of these railroad bridges to the State. Boston, however, chose to retain ownership of the wearing surface of these bridges which normally includes the bridge decks, guardrails and lighting. The State for its part is the owner of the substructure and remaining parts of the superstructure. It appears that at the time the law was passed, Boston chose not to transfer full title of these bridges because it thought the State was less willing or able to fund certain bridge repairs. Given the existing fiscal position of the City relative to that of the State, Boston may wish to reconsider its earlier decision.

In addition to BPWD's ongoing street, sidewalk and lighting improvements, the Department has also begun to investigate two extraordinary infrastructure projects. The first of these is the construction of a waste-to-energy facility in Boston of sufficient size to burn 400,000 tons of solid waste per year, which is 40% more than the 250,000 tons of residential solid waste that are collected by PWD each year. Present plans are for the waste-to-energy plant to be located at the City-owned South Bay Incinerator site and surrounding properties.



The facility is to be constructed by a private firm, at an approximate cost of more than \$150 million. In order to reduce the debt service costs of the project, industrial revenue bonds will be issued on behalf of the private owner/operator. It is intended that the City will enter into contract with the owner guaranteeing that the City will have first access to the facility for the disposal of the primarily residential waste collected by BPWD. The proposed contract also provides that the cost to the City per ton of trash delivered to the plant will rise more slowly than the consumer price index.

Issues yet to be resolved with respect to the waste-to-energy plant include whether commercial and institutional solid waste generated in Boston will be given priority access over waste generated in other municipalities. In addition, estimates of the full cost and benefits (economic and environmental) of the plant are still being refined.

The second unusual project of the Public Works Department is as yet in only a very preliminary stage. Recently, PWD received a request from one of Boston's major financial institutions to allow the firm to install in the street bed a private communication and data transmission line between two of its main offices. Although at present this is only an isolated request, experience in other cities such as New York and Milwaukee suggest that other such requests may soon follow. Consequently, PWD in conjunction with the Boston Redevelopment Authority, have begun to explore the feasibility of installing a system of conduits that would allow for data transmission, cable television, and other forms of telecommunications in a limited portion of downtown Boston. If the legal, financial and technical problems of such a communication network can be resolved, it could be a first step toward

the development of a teleport in Boston, similar to those being developed in New York or Milwaukee.

#### City-Owned Parks and Recreation Facilities

The City's capital expenditures on parks and recreation facilities also displays the pattern of higher levels of investment in the years prior to proposition 2½ and significantly lower levels thereafter. As Table 10 shows, from 1978 through 1980, the Boston Parks and Recreation Department's (BPRD) annual capital expenditures ranged from 2.0 to 2.7 million dollars. An additional 0.5, 2.2, and 2.7 million dollars was spent by other City agencies (BRA, PFD, NDEA) on parks and recreation capital improvements in years 1978-80, respectively. After 1980, capital investment in parks and recreational facilities declined rapidly reaching a low in 1982 of \$585,000 by BPRD and less than \$150,000 by other City agencies. Total parks and recreation investment in 1983 was not much higher. With the help of a considerable amount of state and federal grants, parks and recreation capital expenditures are expected to reach \$2.8 million in FY84.

Recently the BPRD has completed a report which outlines a five-year capital improvement program for the City's park and recreation facilities. If adopted, this program would presumably cover fiscal years 1985 through 1989. The proposed parks and recreation CIP, summarized in Table 11, envisions a return to a five million dollar yearly expenditure level that was achieved during much of the 1970s. Planners from BPRD indicate this level of capital spending is necessary simply to correct the backlog of parks and recreation capital needs. No new parks or major recreational facilities are proposed in the CIP.

Table 10

CAPITAL EXPENDITURES OF BOSTON PARKS AND RECREATION DEPARTMENT,<sup>1</sup> FY 1978-1983  
\$000's

Type of Expenditure	Neighborhood(s)	1978	1979	1980	Fiscal Year		1983	1984 <sup>2</sup>
					1981	1982		
Reconstruction and Improvement of Park Facilities	City Proper	695	315	367	213	70	71	541
	Dorchester, Mattapan	216	216	0	0	0	27	573
	Charlestown	26	111	28	0	0	0	0
	West Roxbury, Roslindale	144	329	65	111	74	0	48
	Roxbury, Jamaica Plain	360	99	21	88	145	37	716
	Hyde Park, Mattapan	170	134	132	0	0	0	0
	Allston/Brighton	187	132	380	4	96	0	121
	East Boston	0	171	156	0	0	0	370
	South Boston	0	468	52	56	0	0	335
Sub-total Neighborhood Specific Expenditures		1,798	1,975	1,201	472	385	135	2,704
Repairs & Reconstruction of Buildings & Facilities	City-wide	241	178	215	208	74	89	118
Installation of New Seats, Benches, Fencing, Pavements	City-wide	150	177	222	92	66	17	34
Tree Planting	City-wide	118	420	292	38	28	20	-
Repairs to Irrigation Systems	City-wide	0	35	98	60	32	9	-
Sub-total City-wide Expenditures		499	810	827	398	200	137	152
Total Capital Expenditures BPRD <sup>1</sup>		2,297	2,785	2,028	870	585	272	2,856

Funding Analysis 1978-83: 1,315 or 15% Federal, 7,082 or 80% City, 440 or 5% Trust Funds and misc.

1984: 1,305 or 46% Federal, 150 or 5% State, 552 or 19% City, 849 or 30% Trust Funds and misc.

For additional federal funding of parks and recreation, 1978-83, see Table 12.

Source: BPRD Contract Files, 1983 BPRD annual report.

- <sup>1</sup> In addition to the BPRD expenditures listed above, from 1978-1983, the BRA spent over \$3.1 million on park construction in Charlestown, Fenway and Downtown. NDEA spent over \$1.0 million on parks and recreation improvements from 1979-84. PFD spent over \$5.0 million on park and recreation facilities from 1979-83.
- <sup>2</sup> The fiscal 1984 BPRD capital expenditures amounts listed above include both BPRD and PFD parks and recreation capital improvements. For capital expenditures on park facilities funded by NDEA in 1984, see Table 19.

Table 11

SUMMARY OF PARKS AND RECREATION DEPARTMENT FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM  
(\$000s)

Type and Location of Expenditures	Neighborhood(e)					1988	1989	Total 1985-89
	1985	1986	1987	1988	1989			
<b>Improvement of Major Park System Facilities and Grounds</b>								
Arnold Arboretum	50	0	0	0	50			100
Back Bay Fens	100	200	200	200	500			1,400
Boston Common	200	200	200	200	200			1,000
Commonwealth Avenue	50	50	50	75	125			350
Franklin Park	500	600	600	700	900			3,300
Olmstead Park	120	0	142	0	0			100
Public Garden	100	100	100	100	100			500
Riverway	0	50	0	50	0			100
"I" Street Beaches	0	0	0	0	224			224
<b>Total Major Park System Improvements</b>	<b>1,120</b>	<b>1,200</b>	<b>1,292</b>	<b>1,525</b>	<b>2,099</b>			<b>6,074</b>
<b>Total Citywide Improvements (tree planting, misc.)</b>	<b>200</b>	<b>300</b>	<b>300</b>	<b>400</b>	<b>500</b>			<b>1,700</b>
<b>Improvement of Neighborhood Park and Recreation Facilities and Grounds</b>								
Boston Proper *	0	0	46	11	47			104
Back Bay/Fenway	0	0	0	0	208			208
Allston/Brighton	250	359	502	7	332			1,450
Charlestown	262	125	304	243	84			918
Dorchester	907	687	565	1,434	644			4,257
East Boston	235	290	107	156	463			1,251
Hyde Park	287	0	114	89	100			610
Jamaica Plain *	76	0	369	6	200			651
Mattapan	260	150	0	135	0			545
Mission Hill	0	365	20	0	0			385
North End	115	138	78	0	10			441
Roslindale	204	295	150	0	2			647
Roxbury	519	519	336	276	158			1,806
South Boston	92	300	352	508	120			1,382
South End	20	186	293	172	83			734
West Roxbury *	295	84	0	173	0			552
<b>Total Improvements of Neighborhood Park and Recreation Facilities and Grounds</b>	<b>3,382</b>	<b>3,498</b>	<b>3,215</b>	<b>3,210</b>	<b>2,451</b>			<b>15,756</b>
<b>Total Park and Recreation Capital Improvements</b>	<b>4,702</b>	<b>4,998</b>	<b>4,807</b>	<b>5,135</b>	<b>5,050</b>			<b>24,692</b>

Funding Analysis: Assuming that park and recreation funding trends will continue, approximately 60% of future expenditures will be funded from City bonds.

\* Does not include investments listed above under Major Park System Improvements.

Source: BPRD Capital Improvement Program Document.



The Parks and Recreation Department has not outlined funding sources for its proposed CIP. The bulk of the funding for the five-year program would likely have to come from City bonds and CDBG funds. There are, however, several federal and state funding sources which will likely be drawn upon for the BPRD's proposed CIP, as well as for the development of new park or recreation facilities in Boston. Perhaps the most important state funding sources are contained in the Commonwealth's fiscal 1984 capital outlay budget. Nearly eight million dollars was authorized for reconstruction work at the Franklin Park Zoo and \$13 million was authorized for the rehabilitation of the State's Olmsted Parks, four out of nine of which are in Boston. An additional \$31.3 million was authorized for the development of Urban Heritage State (UHS) Parks. One UHS Park is planned for Roxbury and another at Lower Mills in Dorchester. In addition to these state funding items, parks and recreation capital improvement funds have in the past been obtained from the federal Land and Water Conservation Fund and the federal Urban Parks and Recreation Recovery Program.

#### Municipal Buildings

Responsibility for constructing, renovating, and maintaining the City of Boston's and the County of Suffolk's buildings is divided among several agencies. The Public Facilities Department and the Real Property Department have primary responsibility for planning and undertaking building-related capital improvements for the various City agencies, with the partial exception of the Health and Hospitals and School Departments. With regard to the City's hospitals, PFD has historically been responsible for new construction and most major

renovations. However, building improvements and capital equipment purchases costing as much as \$500,000 have in the past been planned and financed by the Health and Hospitals Department. Responsibility for capital improvements to the City's schools is shared not only between PFD and the School Department, but also with the Massachusetts School Building Assistance Commission and presently with the Federal District Court. In the case of Suffolk County buildings, responsibility is rather imperfectly shared between PFD and the State. The tremendous amount of investment needed, or required by court order, in the County's buildings is necessitating a review of funding and administrative arrangements for these facilities.

The boom in the construction of new City buildings in the late 1960s and the 1970s, followed by the reduced capital spending levels necessitated by Proposition 2½, has left a large backlog of renovation and repair needs in the City's buildings. This backlog of building needs is widely recognized but detailed information on yearly funding requirements is only now being developed. Nevertheless, some preliminary estimates of recent capital investment levels and future capital investment needs of the City's buildings are presented in this report. Efforts are underway now at PFD, the School Department and among the various City agencies to more accurately define the capital investment needs of the City's buildings. The results of these efforts should be available soon. Until then the following preliminary estimates of the recent capital investment record and future capital needs of the City and County buildings will be adopted for purposes of exposition.

Public Safety, Public Works, Parks, Library and General Purpose  
Buildings

As mentioned, the Public Facilities Department has primary responsibility for the capital improvements in the City's police and fire stations, public works and parks department facilities, libraries and general purpose buildings. Very little reliable information is available on recent capital investment in these buildings and facilities. The information that is available is summarized in Table 12. Currently, PFD, with the assistance of Wallace-Floyd Associates, is performing a study estimating the capital needs of PFD-managed buildings and setting forth a process by which repair and maintenance investments can be efficiently undertaken. A draft report is expected to be completed by Wallace-Floyd in April of 1984.

The PFD/Wallace-Floyd study includes a sample of 112 buildings from the Police, Fire, Real Property, Library, and Printing Departments. A cursory exterior survey of all 112 buildings was first performed, followed by a more detailed investigation of 35 buildings drawn from the original 112 buildings sample. Each of the 35 buildings was rated according to its capital investment needs, ranging from complete renovation to minor repairs. Then the per square foot costs, taken from published building industry data, of each building's investment needs were multiplied by building square footages to provide an overall estimate of the capital requirements of the 35 buildings sample. Depending on the amount of adjustment needed to account for conditions particular to these buildings and to Boston, the overall capital requirement of the 35 buildings is estimated to be between seven and nine million dollars.



Table 12

SELECTED CAPITAL EXPENDITURES OF THE PUBLIC FACILITIES DEPARTMENT<sup>1</sup>  
\$000's

Expenditure Category <sup>2</sup>	Fiscal Year			
	1978	1979	1980	1981 1982 1983
School Facilities	(Included as part of Table 14)			
Hospitals	(Included as part of Table 13)			
County Courthouse, Jail and Prison		872	228	234 147 897
Parks and Recreation		617	1,413	2,239 115 400
Police Department Facilities	NA	231	2,109	718 71 0
Fire Department Facilities		245	1,651	167 100 0
Library Facilities		141	948	110 0 0
General Municipal Facilities & Miscellaneous		454	480	528 805 1,153
Total	1,300	2,560	6,829	3,996 1,238 2,450

Sources: City of Boston and County of Suffolk, Auditing Department, Annual Financial Statement, 1978 and 1979.  
Public Facilities Department, Requests for Advertisements, 1978-1983.

City of Boston, Capital Planning Management System (CPMS) Computer File, 1978-1983.

<sup>1</sup> The expenditure figures were drawn from advertisements or unverified estimates of completed project costs, consequently the expenditure figures in this table should be viewed only as preliminary estimations.

<sup>2</sup> Expenditures in each category include new construction, renovation, repairs and major new equipment.

Funding Analysis 1978-1983: 3,400 or 18% Federal funds (almost all for Parks and Recreation).  
15,023 or 82% City funds.

The 35 buildings were chosen to be fairly representative of the original 112 buildings sample, thereby allowing extrapolation of investment needs to the larger sample. Thus the capital requirement of the 112 buildings is likely to be around \$25 million. It is important to keep in mind that this figure is only a rough estimate based upon the preliminary results of the Wallace-Floyd study. Considering that there are nearly twice as many non-school, -hospital or -County buildings than were included in the 112 buildings sample, the capital needs of this portion of the City's building stock could be as high as \$50 million. Although PFD chose the 112 buildings sample as requiring priority attention, the recent approval by City Council of a \$15 million dollar loan order for library renovations would indicate that \$50 million may be a reasonable estimate of the repair and renovation needs of Boston's public safety, public works, library, parks, recreation and general purpose buildings.

### Hospitals

The Boston City Hospital (BCH) is the main health care facility of Boston's Health and Hospitals Department. At one time, BCH was a premier hospital with over 2,000 beds. Then, with advent of welfare, medicaid and medicare programs, low- and middle-income residents of the Boston area were more able to afford treatment at the area's private hospitals. The demand for BCH services and funding for its capital plant began to decline. By the 1970s, BCH's capital plant had deteriorated to such a degree that large infusions of capital investment were needed just for BCH to remain eligible for medicare/medicaid funding. As of today, BCH's in-patient capacity had declined to less

than 500 beds. The recent capital program at BCH represents a continued effort to consolidate and upgrade the hospital's remaining facilities. Table 13 shows the capital investments that have been made at BCH, as well as the Mattapan and Long Island Hospitals from 1978 to 1983. As can be seen from the table, the major investments have been for the construction of the Ambulatory Care Center and Mechanical Plant and the renovation of the Dowling Building, all at BCH.

The future capital investment needs of Boston's Hospitals, also shown in Table 13, are contingent upon the degree of consolidation desired for the City's hospital facilities. At present the facilities of the City's chronic disease hospitals in Mattapan and on Long Island are underutilized or in disrepair. In addition, patients and health care services at BCH are spread across six buildings, often connected only by underground tunnels. Nearly two million dollars is required just to bring the electrical system of BCH up to code. Completion of the Dowling Building renovation and construction of surgery facilities in the Ambulatory Care Center are also scheduled.

The major decision facing the City with regard to Health and Hospitals capital needs, is whether to construct a large new building at BCH which would consolidate and expand BCH's existing services. It could also possibly permit the consolidation at BCH of services now provided at the Mattapan and Long Island Hospitals. A preliminary estimate of the cost of constructing this new building at BCH is \$60 million. It is possible that all or part of this cost could be defrayed by the disposition of some of the properties of the Mattapan and Long Island Hospitals.

Table 13

SUMMARY OF PAST CAPITAL INVESTMENTS AND ESTIMATED FUTURE CAPITAL NEEDS OF BOSTON'S HOSPITALS,  
FY1978-83, 1984-86  
(\$000s)

	Location	1978	1979	1980	1981	1982	1983	1984	1985	1986-87
<b>Building Improvements</b>										
Ambulatory Care Center <sup>1</sup>	BCH	4,482	-	-	-	466	-	500	-	-
Mechanical Plant	BCH	899	-	-	-	-	-	-	-	-
Dowling Building Renovation <sup>2</sup>	BCH	-	-	900	-	800	4,500	-	1,300	3,700
Upgrading Electrical System <sup>3</sup>	BCH	-	-	-	-	-	-	1,800	-	-
Construction of New Building <sup>3</sup>	BCH	-	-	-	-	-	-	-	-	40,000 <sup>3</sup>
Telephone Systems	BCH	-	-	-	-	-	2,320	-	-	-
Telephone Systems	Other Hospitals	-	-	-	-	-	258	-	-	-
Roofing Repairs	Mattapan Hospitals	-	-	-	-	-	-	500	- <sup>4</sup>	-
Miscellaneous Renovations	Long Island	-	-	-	-	-	-	400	2,500 <sup>4</sup>	3,000 <sup>4</sup>
Total General Improvements		5,381	-	900	-	1,266	7,078	3,200	3,800	46,700
Capital Equipment Purchases	BCH	1,972	2,260	1,690	1,117	3,172	1,466	1,939	2,500 <sup>5</sup>	5,000 <sup>5</sup>

## Funding Analysis: (\$000s)

1978-83 Approximately 4,650 or 19% from federal funds  
18,652 or 70% from City bonds

1984-86 Over 90% will come from City funds unless new federal and state funding can be obtained.

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- <sup>1</sup> The FY78 investments for the Ambulatory Care Center and the Mechanical Plant are the last installment of over \$42 million dollars expended for these two projects which were financed almost completely with City funds.
- <sup>2</sup> Approximately \$7,000,000 have been expended to date on the Dowling Building Renovation. Yearly breakdown of this investment should be viewed as a preliminary estimate.
- <sup>3</sup> Preliminary estimate of the cost of a central new building at BCH is \$60 million, a hypothetical \$40 million expenditure is listed for FY86 and FY87.
- <sup>4</sup> Repairs for fiscal years 85 and 86 at Long Island Hospital will only be needed if there is a decision to keep that facility open for at least five more years.
- <sup>5</sup> Estimated capital equipment needs.

Sources: City of Boston, Annual Financial Statements, 1978, 1979.  
PFD and BCH Contract Files and BCH capital planning memo.

### Schools

For slightly more than ten years, Boston's schools have operated under court order. During this period the court has required the City to construct many new schools and to substantially upgrade several others. As shown in Table 14, the high levels of capital investment in the City's school system ended in the late 1970s. A much lower level of repair and renovation investment has continued to the present. Due to the concentration in the 1970s of school capital investment on new construction, there is a backlog of over \$40 million in rehabilitation needs throughout the City's schools.

Also shown in Table 14 is a summary of the capital needs of the City's schools. This information is drawn from a 1981 Capital Improvement Program of the School Department which was updated to include both investments already completed or underway, as well as the School Department's and PFD's school capital budget requests for 1985. The investment needs shown in Table 14 assume that in the near future there will be no major change in the School Department's districts or programs. However, for the longer term, the School Department is considering a plan calling for magnet schools and redrawn school boundary lines. Such a plan would greatly reduce the need for busing, but could potentially entail significant additional capital investments.

Much of the School Department's near term capital investment needs, perhaps as much as 60 percent, are eligible for state reimbursement. However to obtain a guarantee of state reimbursement on new capital spending projects, the State is requiring the School Department to submit an updated capital improvement master plan. Several essential projects, such as the replacement of heating systems in several middle



Table 14

SUMMARY OF CAPITAL INVESTMENT COMPLETED AND PLANNED IN BOSTON SCHOOLS FY1978-83 AND 1984-87  
(\$'000s)

	1978	1979	1980	1981	1982	1983	1984	1985 <sup>3</sup>	1986-87 <sup>4</sup>
No accurate breakdown is available by type of school.									
Total Investment <sup>1</sup>	29,200	25,384	13,983	200	400	2,433		27,757	46,799
Funding Analysis: 1978-83 approximately 66,540 or 65% was eligible for state reimbursements; the remaining 25,060 or 35% was financed solely from City funds. 1984-87 approximately 49,000 or 60% is eligible for state reimbursements.									
							Latin Schools <sup>2</sup>	5,000	15,000
							Other High Schools	3,100	3,381
							Middle Schools	60	2,920
							Elementary Schools	150	13,511
							School Painting	-	2,956
								2,600	10,708
								-	2,600
							Total Capital Needs	8,210	27,757

Funding Analysis: 1978-83 approximately 66,540 or 65% was eligible for state reimbursements;  
the remaining 25,060 or 35% was financed solely from City funds.  
1984-87 approximately 49,000 or 60% is eligible for state reimbursements.

- 1 School capital investment for the period 1979-83 is derived from Auditor's reports, PFD requests for bids, and the CIPMIS computer file. Yearly expenditures shown for this period should be viewed only as preliminary estimates.
- 2 The yearly expenditures shown for the Latin Schools are a hypothetical yearly breakdown of the \$35 million authorized for the construction of the Boston Latin Academy and renovation of the Latin School.
- 3 Fiscal 1985 estimated capital needs are the sum of School Department Fiscal '85 capital budget request; PFD school renovations currently scheduled for FY85 and hypothetical Latin Schools expenditures.
- 4 Fiscal 1986 and 1987 expenditures are the sum of remaining Latin School costs and capital needs of City schools as listed in the School Department's updated Capital Improvement Program.



and high schools are being delayed because guarantees of state reimbursement have not been obtained. To insure a successful capital investment program for the City's schools, the School Department must work with PFD to develop a new master plan that is acceptable to all parties.

#### Courts and Correctional Facilities

The buildings of the County of Suffolk, particularly the County Courthouse, the District Courthouses in Brighton and Dorchester, and especially the County's correctional facilities are in an advanced stage of disrepair. In the case of the Charles Street Jail and the Deer Island Prison, the City is under court order to completely rebuild the former and make major improvements to the latter. As for the County's courthouses, language contained in the supporting material to the Governor's fiscal 1985 capital budget request aptly describes the condition of the Dorchester District Court Building.

"This court is functionally inadequate with no ancillary space and in violation of code requirements. There is a severe space problem which necessitates immediate improvements in order to carry out the duties of the court. Trailers and storefronts along Washington Street have been utilized for court records and personnel since 1974. The trailers are now in a state of deterioration."

There is similar language in the Governor's 1985 capital budget request describing the conditions at the Suffolk County Courthouse and the Brighton District Court.

Although the poor condition of the County's facilities has been recognized for some time, very little in the way of capital investment has been undertaken in recent years. Since 1979, the year the City entered into a consent agreement to replace the Charles Street Jail,

less than \$1.5 million has been expended on capital improvements in all County buildings (see Table 12). This poor capital improvement record can be attributed to the tremendously expensive court order coming almost simultaneously with the tax limitations of Proposition 2½. Over the past several years the City has, in various forms, sought State assistance to improve and maintain the County's buildings.

Present cost estimates for rebuilding the Charles Street Jail range from \$38 to \$42 million depending upon the new jail's design capacity. Given the existing situation in the County's correctional system it is expected that the higher capacity level will be required. The City has submitted proposals, requesting State funding for \$28 million of the expected \$42 million reconstruction costs. The Commonwealth is still considering the City's funding request. An authorization of \$44 million for repair and reconstruction of County correctional facilities was included in the Governor's fiscal 1984 capital budget request. Unfortunately, this authorization was cut from the fiscal 1984 capital budget which was finally passed by the legislature. The legislature's late action on this item prevented it from being included as a part of the Governor's fiscal 1985 capital budget request.

The situation regarding the Deer Island Prison is very similar to that of the Charles Street Jail. The Court has ordered certain renovations for which the City has requested State assistance. Preliminary estimates are that the total cost of adequately improving the prison is approximately \$25 million. The City has applied for \$20 million in state funding. As with the jail, the Commonwealth is still considering this request. The bond flyer (Official Statement of Disclosure for the issuance of long-term General Obligation Bonds) which

accompanied the \$30 million City bond issue of September of 1983 indicated that the City was planning to make two million dollars of improvements to the Deer Island prison over the next eighteen months.

The final component of the County's building stock is its courthouses. As previously noted, several of these are in terrible condition. The Commonwealth's fiscal '84 capital budget authorizes \$500,000 for repairs to the Suffolk County Courthouse. Another \$400,000 is included in the Governor's fiscal '85 budget request. Sums of three and five million dollars for renovation of the Dorchester and Brighton Courthouses were omitted from the Governor's request pending further study. Perhaps the most important item in the Governor's 1985 budget request, with respect to the County's courthouses, is \$31.8 million for the funding of a Court Facilities Commission. Enabling legislation for a Court Facilities Commission is expected to be submitted to the legislature in April, 1984. Most versions of the bill would have the State purchase the Suffolk County courthouses, with the Court Facilities Commission responsible for improvement and maintenance of these and other court facilities. If, as expected, this legislation is passed it will provide a long awaited and much needed relief to the City of Boston.

#### Summary of Municipal Building Capital Requirements

The City's schools, hospitals and other buildings all require substantial capital improvements. The County's buildings are in even greater need of repair or replacement. Fortunately, substantial amounts of State funding assistance are available for school capital improve-

ESTIMATED TOTAL CAPITAL REQUIREMENTS OF CITY AND COUNTY BUILDING FACILITIES  
(\$000's)

Building Category	1984	1985	1986	1987
Hospital Construction and Renovation <sup>1</sup>	5,139	5,800	23,700	27,500
School Construction and Renovation <sup>2</sup>	8,210	27,757	25,400	25,400
Charles Street Jail <sup>3</sup>	0	15,000	15,000	12,000
Deer Island Prison <sup>4</sup>	0	10,000	5,000	5,000
County Court Buildings <sup>5</sup>	400	4,000	4,000	4,000
Other Municipal Buildings <sup>3</sup>	5,000	15,000	15,000	15,000
	18,749	77,557	88,100	88,900

1 Assumes \$15 and \$25 million in FY86 and 87 to begin new building at BCH.

2 Includes hypothetical breakdown of Latin School expenditures.

3 Hypothetical yearly breakdown of necessary expenditures.

4 Assumes \$3 and \$5 million for Dorchester and Brighton District Courts and another \$4 million for Suffolk County Courthouse.

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Potential Level of City-Funded Building Facility Capital Improvements

Hospital Construction and Renovation <sup>1</sup>	4,639	5,800	23,700	27,500
School Construction and Renovation <sup>2</sup>	4,926	11,100	10,200	10,200
Charles Street Jail <sup>3</sup>	0	5,000	5,000	4,000
County Court Buildings	0	0	0	0
Deer Island Prison	0	2,000	2,000	1,000
County Court Buildings <sup>4</sup>	0	0	0	0
Other Municipal Buildings <sup>5</sup>	5,000	15,000	15,000	15,000
	14,565	38,900	55,900	57,700

1 As mentioned, a substantial portion of out year hospital capital investments could be defrayed from the disposition of certain hospital properties.

2 Due to the nature of State School Building Assistance, it will be necessary for the City to issue the full amount of bonds, being reimbursed for approximately 60 percent by the State over a twenty-year period.

3 Assumes the State provides the funding which the City has requested.

4 Assumes legislature approves the formation of a Court Facilities Commission.

5 Given past trends very small amounts of federal or state funds were available for repairs to municipal buildings other than schools and hospitals.



ments. In addition, responsibility for the bulk of the County's building needs may also be assumed by the State. Finally, the new building proposed for BCH could at least partially be funded through the disposition of excess hospital properties. In a best case scenario, the receipt of State funds and the sale of excess City properties could reduce by as much as fifty percent the share of City and County building improvements that must ultimately be financed from City tax revenues. The State funding programs, pending funding requests and possible City actions which would lead to this result have been discussed in the preceding sections. This information is summarized in Table 15.

It is important to note that the yearly expenditures shown in Table 15 are in many cases only a hypothetical division of known capital investments needs over a three-year period, 1985-87. It may indeed prove necessary for the City to stretch out the sorely needed improvements to its schools, hospitals, correctional facilities and other buildings over a five-year period or more.

#### Infrastructure for Community and Economic Development

There are three City agencies which have primary responsibility for community and economic development in Boston. These are the Boston Redevelopment Authority (BRA), the Neighborhood Development and Employment Agency (NDEA) and the Economic Development and Industrial Corporation (EDIC). The responsibilities of these three organizations at times overlap, but with regard to infrastructure investment their activities are distinct enough to be discussed separately.

Boston Redevelopment Authority

The BRA is both the City's planning agency and its principal development agent. In these capacities, the BRA directly and indirectly affects the level and direction of infrastructure investment in Boston. For example, in the period since 1978, the BRA has invested over \$30 million in new streets, sidewalks, lighting and parks, as well as new water and sewer lines in the South End, Charlestown, the Fenway and the City's other urban renewal areas (see Table 16). From 1978 through 1983, the BRA has also carried out over \$15 million in additional infrastructure investments supporting a wide range of private development in the Charlestown Navy Yard and throughout the Downtown. In an indirect fashion, the BRA has strongly influenced the course of infrastructure investment in Boston through its decisions on private development projects, as well as through its involvement in the planning of major capital investments of other public agencies.

With the BRA's urban renewal activities drawing to a close, the Authority's future infrastructure investments are expected to shift more fully toward supporting specific economic development and mixed use projects. Such investments have been carried out by the BRA in the past, for instance at Post Office Square, Lafayette Place and, most prominently, Charlestown Navy Yard. However, over the next three years, infrastructure investments in support of such economic development projects planned at North and South Stations, Lafayette Place, the Charlestown Navy Yard and other areas will be absorbing a much greater portion of the BRA's capital expenditures (see Table 17).

Funding for BRA capital investments has come from a wide variety of sources, but from 1978-83 over 75 percent of the BRA's capital funds



Table 16

SUMMARY OF BOSTON REDEVELOPMENT AUTHORITY CAPITAL EXPENDITURES, 1978-1983  
(\$000a)

Project Area *	Neighborhood	1978	1979	1980	1981	1982	1983
Charlestown	Charlestown	226	1,897	710	984	46	0
North Station	Central Boston	0	0	0	0	0	0
Post Office Sq., Lafayette Pl., Summer St.	Central Boston	0	154	387	335	85	1,553
South Cove	Chinatown	330	94	270	154	65	259
Waterfront	Central Boston	70	657	0	0	0	9
Fenway	Fenway	1,115	1,927	454	514	318	0
Campus High	Roxbury	469	184	0	0	190	51
Washington Park	Roxbury	0	0	851	0	62	0
Kittredge Square	Roxbury	293	115	340	0	34	0
Charlestown Navy Yard	Charlestown	626	2,697	1,227	1,950	1,315	251
South End	South End/Central	2,113	11,374	4,307	3,199	624	23
Total Boston Redevelopment Authority		5,242	19,099	8,546	7,136	2,736	2,146
Infrastructure Expenditures							

## Funding Source Analysis (\$000a) and % of Total:

EPA-13, 047/29%; EDA-5,659/13%; UDAG-2,419/5%; Urgent Needs & CDBG-13,903/31%; Urban Renewal-1,394/3%  
 State DHPC-2,813/6%  
 City Loan Orders-4,408/10%, Browne Fund-495/1%  
 BHSC & MBTA-619/2%

Total Federal - 36,422 or 81%  
 Total State - 2,813 or 6%  
 Total City - 4,903 or 11%  
 Other Local - 619 or 2%.

\* Work in each of the project areas generally included some combination of street and sidewalk reconstruction, new sewers, drains and water connections, street lighting, tree planting and construction parks and plazas.

Table 17

PROJECTED CAPITAL INVESTMENTS BY THE BOSTON REDEVELOPMENT AUTHORITY,  
1984-1986

	Last Six Months FY1984	FY1985 (\$000s)	FY1986
<u>City-Funded BRA Capital Investments<sup>1</sup></u>			
Charlestown	755	1,440	1,560
Charlestown Navy Yard	1,026	3,060	240
Chinatown	216	0	0
Columbia Point	0	1,200	1,200
Lafayette Place	3,348	1,534	0
North Station	1,512	960	360
Park Plaza	0	630	480
South End	540	1,380	720
South Station	1,080	1,560	0
Waterfront	119	0	0
Sub-Total City-Funded Capital Investments	8,596	11,764	4,560
<u>Additional Capital Investments in BRA Project Area<sup>2,3</sup></u>			
Charlestown	4,550	4,300	700
Charlestown Navy Yard	800	400	400
Chinatown	165	250	200
Columbia Point	425	1,500	1,000
Lafayette Place	500	2,300	0
North Station	500	1,750	1,750
Park Plaza	4,000	NA	NA
South End	2,500	10,200	5,400
South Station	4,775	3,100	21,000
Waterfront	2,000	2,900	3,100
Dewey Square	200	300	3,000
Fenway	300	1,100	300
Kittredge Square	110	150	100
Theatre District	675	300	750
Sub-Total Additional Capital Investment	21,500	28,550+	18,800+
Total Estimated BRA Capital Investments	30,096	40,314+	24,360+

<sup>1</sup> From Capital Budget section of Boston in Transition, a report of The Financial Analysis Research Group of the Flynn Administration Transition Team.

<sup>2</sup> Additional BRA Capital Investments are extremely rough estimates derived from draft BRA project plans; BRA Projects, a report to the Flynn Transition Team; and BRA Accomplishments and Prospective 1983/84.

<sup>3</sup> A significant portion of expenditures listed as Additional BRA Capital Investments appear elsewhere in this report. Most important are approximately \$13 million of Urban Systems road projects in the South End and another \$4 million in Charlestown.

have been obtained from the federal government. The BRA's federal funding sources listed in the order of their importance were the CDBG and Urgent Needs programs, EPA sewer system grants, Economic Development Administration (EDA) programs, Urban Development Action Grants (UDAGs) and urban renewal close-out funds. The Commonwealth has provided the BRA with only six percent of its capital investment funding, almost completely in the form of the State matching component of EPA sewer programs. City capital, including the Browne and White funds, have provided eleven percent, and other sources such as BRA disposition proceeds, BWSC reimbursement and MBTA contributions have each contributed one percent or less (see Table 16 for a summary).

The termination of federal funding for urban renewal and various EDA programs together with the reduction of CDBG funds and the shift of BRA capital investment away from EPA-funded sewer work will cause the BRA to depend more heavily on State, City and internal capital funding sources. From 1978-83, the City provided the BRA with slightly less than five million dollars in capital funds. A preliminary projection for the period 1984-86 envisions almost \$25 million of the BRA's capital investments being derived from City funds (See Tables 16 and 17). Possible state and federal funding sources have been identified for another \$70 million in capital improvements in BRA project areas.

In addition to the more conventional public funding arrangements, there has been a significant trend toward private funding of infrastructure improvements in areas proximate to major development. Some recent examples of this trend are listed in Table 18. Although cost estimates are not available for several of these privately funded public improvements, it can be seen that several of them represent

Table 18

A PARTIAL LIST OF PRIVATELY-FUNDED INFRASTRUCTURE IMPROVEMENTS  
IN CENTRAL BOSTON

<u>Development</u>	<u>Description of Public Improvements</u>	<u>Cost</u>
Arlington/Hadassah	Contribution to maintenance of Public Garden/ Boston Common	\$ 75,000
	Construction of sidewalks and plaza	NA
Copley Square	Redesign and reconstruction of Copley Square	\$2,500,000
Four Seasons Hotel	Construction of public plaza	NA
Government Center Parking Garage Development	General public improvements	\$3,000,000
International Place (Fort Hill Square)	Relocation of High Street ramp	NA
Jenney Building Restoration	Public open space improvements	\$ 140,000
Marketplace Center	Walk-to-the Sea and under Artery improvements	NA
Sanborn Building	Street improvements to Merchants Row	NA

significant investments on the part of developers and private property owners. With respect to new developments, the BRA is responsible for negotiating with developers on what if any public improvements shall be privately funded. Boston's continuing development boom and the importance of nearby public improvements to new development projects, puts the BRA in an advantageous position in these negotiations. The ability of developers to absorb linkage payments, fulfill local and minority hiring quotas and finance on- and off-site infrastructure investments all attest to the growing attractiveness of Boston as a place to work and live.

Finally, the resources available to the BRA for capital investments could increase as a result of the Authority's leasing activities. Recently, the BRA has entered into lease agreements with developers of BRA-owned land and on two such parcels now being developed, the BRA will be receiving a total of \$1.9 million in annual lease revenues. Considering that the BRA owns approximately 110 acres or over 25 percent of the vacant land in Central Boston, lease arrangements with private developers could potentially become a very important source of revenue for the Authority. The lease revenues could be restricted for certain development uses or simply used to defray the BRA's operating and planning costs, thereby indirectly increasing the amount of funds available for BRA infrastructure investments.

#### Neighborhood Development and Employment Agency (NDEA)

As the primary agency responsible for neighborhood development, the NDEA has, since its creation in 1976, periodically funded public capital improvements in the City's neighborhoods. NDEA also operates a wide



variety of commercial and residential improvement programs, has primary responsibility for the City's employment and training programs and provides funding to numerous human service providers throughout the City. However, because NDEA possesses neither the power of eminent domain nor the authority to administer public improvement contracts on its own, it has to contract with other City agencies in order to carry out its infrastructure investment programs. NDEA has found this indirect contracting process to be both expensive and time consuming. As a result, NDEA's public capital improvements have never been very large. For fiscal year '84 NDEA is providing very little new funding for public capital improvements. Capital improvements for previous years included various public improvements in neighborhood business districts, investments in park and recreation facilities, improvements at BHA properties and improvements to the facilities of non-profit organizations (see Table 19).

NDEA operates with only a one-year planning horizon. Proposals for the use of \$15 to 20 million in fiscal 1985 CDBG funds are now being formulated. Agency personnel have indicated that they are reluctant to request significant funding for capital improvements until they are given authority to carry out these improvements on their own. This lack of authority and the resulting reluctance to fund capital improvements is unfortunate. NDEA has the increasingly important role of coordinating public and private improvements in most of the City's neighborhoods. Large public investments such as the reconstruction of Blue Hill Avenue, the development of Urban Heritage Parks in Roxbury and Dorchester, or the relocation of the Orange Line are most beneficial when they are matched by smaller, complementary investments both public

Table 19

INFRASTRUCTURE EXPENDITURES BY THE NEIGHBORHOOD DEVELOPMENT AND EMPLOYMENT AGENCY  
\$000's

Program/Expenditure Type	Neighborhood	1978	1979	1980	Fiscal Year		1983	1984
					1981	1982		
<u>Commercial District &amp; Neighborhood Improvement Programs</u>								
Street and Sidewalk Reconstruction,	Dorchester	0	0	0	0	2,280	241	160
Street Lights, Tree Planting	Roslindale	0	0	0	0	185	0	0
New Street Construction, Street Lights,								
Tree Planting	South Boston	0	0	0	0	0	120	0
Street Reconstruction, Lighting	Jamaica Plain	0	0	0	0	0	187	0
<u>Parks, Recreation and Open Space</u>								
Urban Gardens	Roxbury	0	0	30	0	0	0	0
	South End	0	0	30	0	0	0	0
Pocket Park Construction	Beacon Hill	0	0	25	0	0	0	0
Construction of Playground	Chinatown	0	0	15	0	0	0	0
Urban Garden	Dorchester	0	0	13	0	0	0	0
Business District Amenities	City-Wide	0	0	92	0	0	0	0
Reconstruction of Park Facilities	City-Wide	0	0	0	0	0	242	761
<u>Recreation &amp; Site Improvements at BHA Properties</u>	Various	0	0	263	0	0	0	0
<u>Capital Improvements for Non-Profit Organizations</u>								
Interior & Exterior Building Restorations	Roxbury	0	0	192	0	66	0	0
Energy Retrofits, Roof & Window Repairs	W. Roxbury, Roslindale	0	0	47	0	37	0	0
Rehabilitation of Historic Structures	City-Wide	0	0	42	0	0	0	0
Building Renovations	Hyde Park	0	0	70	0	70	0	0
Building Renovations	Jamaica Plain	0	0	83	0	0	0	0
Site Acquisition for Health Center	Mattapan	0	0	50	0	0	0	0
Building Rehabilitation	East Boston	0	0	0	0	81	0	0
Renovation of Health Clinic	South Boston	0	0	40	0	49	0	0
Rehabilitation of Recreation Facility	Allston/Brighton	0	0	23	0	40	0	0
Rehabilitation of Buildings & Facilities	Charlestown	0	0	53	0	37	0	0
Building & Facility Renovations	Dorchester	0	0	120	0	260	0	0
Building Rehabilitation	North End	0	0	185	0	0	0	0
"	South End	0	0	0	0	94	0	0
"	Fenway	0	0	0	0	45	0	0
<b>Total NDEA Infrastructure Expenditures</b>		0	0	1,373	0	3,174	796	921

Funding Analysis 1978-84: 6,184 or 99% Federal CDBG and UPARR funds;  
(8000s) 80 or 1% City funds.

Source: NDEA budget documents and contract files.

I For the Commercial District and Neighborhood Improvement Programs expenditures were recorded in the year the projects were advertised.

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and private. The City would benefit if the authority and ability for carrying out neighborhood planning and capital improvements were clearly delegated.

#### Economic Development and Industrial Corporation (EDIC)

As the City's industrial development agency, the Economic Development and Industrial Corporation, is the developer and manager of four industrial parks: The Boston Marine Industrial Park (BMIP) in South Boston, the Crosstown Industrial Park (CTIP) in Roxbury, the Alsen-Mapes Industrial Park (AMIP) in Dorchester and the Boston Army Base also in South Boston are all managed by EDIC. It is at these sites that EDIC has responsibility for maintaining and improving the basic infrastructure, as well as for the maintenance and improvement of the industrial buildings for which EDIC is in most cases the owner and lessor.

The present infrastructure needs of EDIC's industrial sites varies dramatically. For instance, at AMIP and CTIP, EDIC has already completed most of the necessary infrastructure investments in the form of site preparation, road construction and installation of utility distribution systems. (See Table 20.) All building sites at these two industrial parks have either already been leased and improved by private firms or are sufficiently prepared for future private development. The condition of the infrastructure at BMIP and BAB is however not nearly as good. The facilities at both of these sites were allowed to deteriorate during their last years as military installations, consequently even though EDIC has invested over ten million dollars in infrastructure

Table 20

SUMMARY OF PAST CAPITAL EXPENDITURES OF THE ECONOMIC DEVELOPMENT AND INDUSTRIAL CORPORATION,  
1978-83  
(\$000a)

Location and Type of Investment	Neighborhood	Calendar Years					
		1978	1979	1980	1981	1982	1983
South Boston							
I. Boston Marine Industrial Park							
A. Infrastructure Expenditures							
1. Conversion of Bldg 49 to Industrial Skills Training Center		1,235	0	0	0	0	0
2. Reconstruction of Pier 5 and Drydock 4		0	0	0	2,000	0	0
3. Clearance and Rehabilitation of Dilapidated Pier Area		0	0	0	2,100	0	0
4. Installation of Electrical, Gas, and Water Distribution Systems		0	715	715	0	0	0
Total Infrastructure Expenditures		1,235	715	715	4,100	0	0
BMIP							
B. Capital Improvements to Buildings							
Leased to Private Firms		662	661	0	300	2,700	600
(Rehabilitation of Buildings 18, 21, 31, 32, 53)							
Total Capital Expenditures at BMIP		1,897	1,376	715	4,400	2,700	600
Roxbury							
II. Crosstown Industrial Park							
A. Infrastructure Expenditures							
1. Street & Utility Construction for Parcels 1 & 4		550	550	0	0	0	0
2. Site Clearance, Road & Utility Construction Parcel 2		0	0	0	730	0	0
Total Infrastructure Expenditures at CTIP		550	550	0	730	0	0
South Boston							
III. Boston Army Base							
A. Infrastructure Expenditures							
1. Improvements to Roadway, Lights, & Utilities along Drydock Ave. & Terminal St.		0	0	0	0	0	1,780*
B. Capital Improvements to Buildings							
Leased to Private Firms							
1. Renovation of Electrical Service, Freight Elevators, and Other Improvements to Building 114		0	0	0	0	0	11,850*
Total Capital Expenditures at BAB		0	0	0	0	0	12,630*
Total Capital Expenditures by EDIC		2,447	1,926	715	5,130	2,700	13,330

\* Improvements listed for 1983 at BAB will not be completed until mid-1984.

Funding Analysis (\$000a): 10,690 or 40% Federal  
600 or 2% State  
6,234 or 23% City bonds  
3,150 or 12% Syndication  
6,300 or 23% Industrial Revenue Bonds.



improvements at BMIP and BAB since 1978 (see Table 20), important infrastructure improvements at these sites have yet to be funded.

EDIC's current infrastructure investment activities concentrate almost entirely on the BAB, with over \$4 million of infrastructure improvements presently underway there. Future capital investment plans of EDIC focus on both the BAB, as well as the initiation or completion of certain extraordinary infrastructure improvements at BMIP. As can be seen from Table 21, the future investments needed at BMIP include the upgrading or replacement of streets and utilities estimated to cost approximately \$4 million, as well as the more expensive structural improvements to BMIP's piers, jetties and drydocks, totaling over fifteen million dollars. At the BAB, it is foreseen that over the next five years, the reconstruction of the site's major truck route at a cost of \$400,000 will be necessary. The rehabilitation of berths 9 and 10, in order to permit industrial development in that area, as well as the rehabilitation of various buildings at the BAB is also envisioned.

A potential industrial site that may also require substantial investment in new infrastructure is the present Boston State Hospital complex (BSH). The State Division of Capital Planning and Operations (DCPO) is the lead agency involved in the disposition of the site's buildings and grounds. EDIC has formulated a preliminary proposal for industrial development of a part of the site. At present, no cost estimates for the supporting infrastructure have been developed, nor has DCPO yet made any decisions concerning future uses of the BSH complex. It is known however that many of the BSH buildings are in near total disrepair. In addition, transportation access to the site is poor, at least with respect to industrial uses. In sum, if a portion of the BSH



Table 21

## CAPITAL INVESTMENT NEEDS OF ECONOMIC DEVELOPMENT AND INDUSTRIAL COMMISSION

Type of Improvement	Cost Estimate (\$000s)
<u>Boston Marine Industrial Park (South Boston)</u>	
Rehabilitation of South and East Jetties	10,000
Rehabilitation of Piers 6 and 10	5,300
Repair of Drydock 3	500
Reconstruction of A and 7th Streets	600
Reconstruction and Extension of Drydock Ave.	1,500
Construction of Parking Lots	1,100
Sewer Repairs	200
Street Lighting	200
Total Boston Marine Industrial Park	19,400
<u>Boston Army Base (South Boston)</u>	
Rehabilitation of Berths 9 and 10	(Estimate not yet available)
Reconstruction of Terminal Street	400
Total Boston Army Base	400+
Total EDIC Capital Investment Needs	19,800+

Funding Analysis: Possible funding for perhaps one-third of these capital investment needs have been identified; funding of the remaining projects is as yet undetermined.

site is used for industrial purposes, there will be a need for substantial infrastructure investment. Funding options for these investments have not yet been publicly discussed by EDIC or DCPO.

At present, EDIC has not yet firmly secured funding for any of the future investment needs at its existing industrial parks (see Table 21). In the past, EDIC relied primarily on funding from federal sources (mainly EDA grants and UDAGs) and on general obligation bond funding from the City. With the gradual disappearance of EDA funding, and with the proceeds of EDIC's original \$7 million dollar bond issue from the City now completely expended, EDIC's future capital investment funding is at best problematic.

EDIC reports that out of its annual operating budget of \$3.4 million, only \$50,000 can normally be spent on capital improvements. Even if this figure can be increased somewhat, outside funding for major capital investment projects will clearly be required. It appears that the proposed "Ocean Coastal/Block Grants" program could, if approved by Congress, provide funds for harbor infrastructure. The Coastal Zone Reconstruction Bill recently passed by the Massachusetts Legislature (H6820) may also provide funding for projects at BMIP. Yet even if new federal and state funds are made available to EDIC, it is certain that they would have to be matched or supplemented by local resources.

Local funding could be provided in a number of ways. The most obvious would be to make the proceeds of another general obligation bond issue available to EDIC and/or to allocate portions of the City's CDBG funds for EDIC's use. Another option is for the City to extend its backing to revenue bonds issued by EDIC. To date the City has only placed its full faith and credit behind the EDIC bonds that were issued

on behalf of the Digital Equipment Corporation. These bonds were also backed by Digital's full faith and credit. For EDIC to use revenue bonds to fund general infrastructure improvements, it would have to dedicate a certain portion of the lease payments it receives to the repayment of these bonds. Since EDIC is not presently financially strong enough to issue revenue bonds on its own credit, the City would have to provide an obligation to pay in case of default.

Another local funding option would be the further use of syndication financing by EDIC. At present EDIC owns most of the land and buildings of its industrial parks and leases these facilities to private firms. However, at the BAB, EDIC has legally sold the buildings to a private firm while EDIC is the lessor of the facilities. This sale/leaseback enables the private firm to obtain the tax benefits of depreciation, with those tax benefits being shared indirectly with EDIC through lower lease payments or directly through a higher purchase price. This syndication arrangement at BAB has provided EDIC with \$850,000 in additional revenues which are being used to help fund the reconstruction and widening of Drydock Avenue and Terminal Street. It may be possible for EDIC to sell and lease back some of its other facilities, in order to increase its revenues. However, in some cases, it may not be deemed good public policy for EDIC to lose the control of ownership over its facilities, in which case it may be more advantageous for EDIC to sell minority interests in its facilities.

Finally, EDIC's in-lieu-of tax payments to the City, the first of which is expected in 1984, could be dedicated, for a certain number of years, towards infrastructure investment at EDIC's industrial parks.

## II. INFRASTRUCTURE INVESTMENT IN BOSTON BY THE COMMONWEALTH OF MASSACHUSETTS AND ITS SEMI-AUTONOMOUS AUTHORITIES

### Summary

The infrastructure investments in Boston since 1978 of the State and semi-autonomous agencies that are discussed in this report are summarized in Table 22. The table presents the information by type of investment rather than by agency. As can be seen, the Boston region's mass transit system has been the recipient of the majority of the recent investments of the State and semi-autonomous agencies. Boston's air and port facilities, highways and bridges, and several economic development sites have also been the focus of substantial capital investment by the State and its authorities. Much smaller sums have been expended on parks and recreation and, relative to the size of the problems, almost negligible amounts were expended for regional water and sewer system improvements.

The high investment totals for mass transit and the relatively low ones for highways and bridges is primarily the result of the transfer of federal interstate highway funds from new highway construction to the Orange Line relocation and Red Line extension. This transfer of funds was the direct result of the "highway moratorium", which was fashioned by the City and State in the early 1970s as a means of creating a public transit oriented transportation system in the Boston metropolitan region. However, if the Central Artery depression and Third Harbor Tunnel receive federal funding, it is possible that over the next decade highway investment in Boston will again exceed that for mass transit.

As can be seen from Table 23, it is not only Boston's highways and bridges which are scheduled for substantial increases in investment from

Table 22

SUMMARY OF INFRASTRUCTURE INVESTMENT BY STATE AGENCIES AND SEMI-AUTONOMOUS AUTHORITIES, 1978-83  
(\$000s)

	Agency(s)	1978	1979	1980	1981	1982	1983
Highways and Bridges(In Boston)	MDPW, MDC, MassPort	19,100	9,267	7,396	17,855	16,516	6,208
Mass Transit (Regionwide)	MBTA	305,279	314,883	340,150	331,682	309,533	279,500
Port Facilities	MassPort	78,073	8,905	10,355	43,044	49,672	17,006
Economic Development Sites	MassPort	4,265	1,454	3,007	5,368	10,674	12,372
Park and Recreation Facilities	MDC	NA	9,608	2,065	727	1,720	176
Regional Water and Sewer System	MDC	NA	363	766	891	533	6,479
		406,717+	344,480	360,732	399,567	388,648	321,741

Funding Analysis (approximate) 69% Federal  
 19% State Bonds (MDPW, MDC, MBTA)  
 11% MassPort revenues and revenue bonds  
 1% Miscellaneous grants received by MassPort



Table 23

SUMMARY OF PROSPECTIVE INFRASTRUCTURE INVESTMENT BY STATE AGENCIES AND SEMI-AUTONOMOUS AUTHORITIES  
THROUGH 1989 AND BEYOND  
(\$000s)

	<u>1984</u>	<u>1985-89+</u>	<u>Currently Unscheduled</u>
Highways and Bridges <sup>1</sup>	122,500	63,400	2,216,500
Mass Transit <sup>2</sup>	310,500	2,443,600	-
Port Facilities <sup>3</sup>	60,000	70,000+	100,000
Economic Development Sites <sup>4</sup>	28,620	160,000+	-
Park and Recreation Facilities <sup>5</sup>	10,500	37,500	-
Regional Water and Sewer System <sup>6</sup>	44,900	652,800	1,500,000
State-Owned Buildings	<u>NA</u>	<u>41,600</u>	<u>10,000+</u>
	577,020	3,318,900+	3,826,500+

Funding Analysis: 70% Federal (90% Federal for Central Artery/Harbor Tunnel, 80% for Mass Transit, 55% for Sewerage System).

30% GO and Revenue Bonds of State and Semi-Autonomous Authorities.

<sup>1</sup> Includes projects currently approved by MDPW plus 1/3 of \$28 million authorized in FY84 capital budget.

<sup>2</sup> Based upon past experience about 50-60% of the total Mass Transit capital needs are likely to receive funding.

<sup>3</sup> Investments listed for 1984 are for 1984 and 1985. In years 1985-89+ completion of containerport at BMIP expected to cost \$70 million. Additional air and seaport investments can be expected. An investment of \$100 million at Logan is likely if a third harbor tunnel is constructed.

<sup>4</sup> Investments listed for 1984 are MassPort economic development investments for 1984 and 1985. MassPort investments after 1985 are not yet programmed. The 1985-89+ investment listed is for the reconstruction of the Hynes Auditorium.

<sup>5</sup> Includes MDC Parks Division plans and for 1985-89+, also includes approximately \$10 million authorized in FY1984 capital budget for Urban Heritage and Olmstead Parks in Boston.

<sup>6</sup> Includes MDC plans and additional \$1.5 billion which may be required for secondary treatment and other improvements to sewerage system.

<sup>7</sup> Total of State building improvements in Boston authorized in FY84 capital budget. The \$10 million plus investment listed as currently unscheduled, assumes that the State takes ownership and begins to renovate the Suffolk County Court buildings.

the State and its semi-autonomous authorities. The region's water and sewer system will also require large infusions of capital investment throughout the remainder of the 1980s and beyond. In addition, there has been a large increase in State capital funds authorized for parks and recreation improvements in Boston. Finally, capital investments in Boston's air and port facilities, as well as its mass transit system, are expected to continue at their previously high levels.

A few words are necessary on the financing of the past and prospective investments in Boston by the State and its semi-autonomous agencies. Table 22 provides an approximate breakdown of the funding sources for these investments since 1978. Although there is no category for City-funded investments, there very well could be. Residents of Boston have supported the investments listed in Table 22 in a number of ways. The most indirect is through their state taxes, a portion of which help pay for the debt service on the State's general obligation bonds. More directly, the City or its residents are assessed for a substantial portion of the MBTA's and the MDC's debt service. The passage of Proposition 2½, which restricts the annual increase in these municipal assessments, has forced the State to readjust its capital financing arrangements. This readjustment is likely to be most sweeping with respect to the MDC and the Region's water and sewer system.

The large infusions of capital needed to renovate and expand the MDC's water supply and sewage treatment systems cannot, for reasons that will be explained, be financed under existing arrangements. A separate, self-financing water and sewer authority is needed and likely. The

increased municipal water and sewer charges of this authority would, as now, be levied on the Boston Water and Sewer Commission, which would by law pass them on to Boston's residents through its own fees and charges.

In sum, the State and its semi-autonomous agencies are planning or will be required to undertake several billions of dollars of infrastructure investment in the Boston region over the next five to ten years. A substantial portion of these investments, on the order of seventy percent, is expected to be funded by federal grants. The remainder is likely to be split between State general obligation bonds and revenue bonds of the State's authorities. The exact split will be dependent on the outcome of ongoing deliberations regarding MassBank and the restructuring of the MDC. In any case, Boston's residents, will be supporting, through their taxes, fees and charges, a substantial portion of the debt the State and its authorities incur. If all goes as planned, Bostonians and residents throughout the region will also receive the direct benefits of a more efficient transportation system, expanded port facilities, a cleaner harbor, a more secure water supply, and improved park and recreation facilities, as well as other important public improvements.

## Introduction

After the City itself, it is the Commonwealth of Massachusetts that has the most substantial interest in and impact on Boston's infrastructure. Boston is the center of Massachusetts commercial, financial, cultural and political life. The roads, bridges, ports and public buildings located in Boston provide services which benefit not only Bostonians, but residents throughout the State. It is therefore no surprise that the Commonwealth is concerned with the infrastructure of Boston. Massachusetts' direct investments in Boston's infrastructure begin with legislative authorizations for capital spending by the State's agencies. The legislature also indirectly affects the level of infrastructure investment in Boston through its decisions on local aid and local taxes. Finally, the investment activities of the State's semi-autonomous authorities such as MassPort and the MBTA also have a fundamental impact on the economy of the City and State. The following sections review the recent activities and future plans with respect to infrastructure investment by the State and the semi-autonomous authorities. The discussion begins with a review of recent capital funding decisions and requests by the legislature and the Governor.

## State Capital Budget Authorizations

In January, 1984 the legislature approved and the Governor signed the Commonwealth's first capital outlay budget in three years. The bill authorized \$724 million in construction, rebuilding, land acquisition and equipment purchases. Included among the authorized projects were over \$65 million for projects in Boston and another \$13 million for



improvements to the MDC water and sewer systems which serve Boston. (See Table 24.) A few of the major items in Boston are a \$28 million renovation of the State House, over \$5.5 million for building improvements and new equipment at U.Mass/Boston, \$13 million for restoration of the State's Olmstead Parks (four out of nine of which are in Boston), and nearly \$8 million for the reconstruction of the Franklin Park Zoo.

It should be noted that the State's fiscal 1984 capital budget simply provides bonding authorization for the various projects over a period of five years, unless otherwise extended by the legislature. The actual timing of the specific investments outlined in the fiscal '84 budget will be determined by the responsible departments in conjunction with the Executive Office of Administration and Finance. It is likely that some projects included in the budget will be canceled or postponed beyond the expiration of the five-year authorization. Thus, paraphrasing Secretary of Administration and Finance, Frank Keefe, the capital outlay budget should be viewed as a rich and varied menu from which particular projects will be selected.

Another point which deserves mention and clarification is the \$50 million yearly construction spending limit contained in the '84 capital budget. At first glance, this capital spending ceiling seems quite low. Actually, the \$50 million yearly limit applies only to certain projects of the bill whose costs total \$270 million. Thus the ceiling, if adhered to, simply insures that the projects to which it applies will be constructed gradually over a five-year period. Approximately one-third of the projects contained in the '84 budget which are located in Boston are covered by the \$50 million annual construction ceiling.



Table 24

SUMMARY OF PROJECTS IN COMMONWEALTH'S FISCAL 1984 CAPITAL BUDGET,  
WHICH DIRECTLY AFFECT BOSTON

<u>Project Category</u>	<u>Amount</u> <u>(\$000s)</u>
Alterations and Improvement of State Office Buildings in Boston	32,462
Renovation and Alteration of Suffolk County Courthouse	500
Renovation of IRR Building at Boston State Hospital	1,545
Building Improvements and Equipment at U. Mass/Boston	5,253
Furnishing and Equipment at Roxbury Community College	250*
Land, Buildings and Equipment at Urban Heritage Parks	31,300
(Out of 14 UHS Parks, 2 are to be in Boston)	
Rehabilitation of State's Olmstead Parks	13,000*
(4 out of 9 of these parks are in Boston)	
<u>MDC Items</u>	
Water Metering and Monitoring Equipment	4,677*
Water Main Improvements	6,500*
Repair of Water Supply Facilities	1,139
Chlorine Storage and Handling Facilities at Nut Island	2,000*
Improvement of Park at Belle Island, East Boston and other	2,500
MDC Facilities	
Replacement of Sand at Savin Hill Beach, Dorchester	75*
Improvements to Boston Harbor Islands, Mystic Lakes, Middlesex Fells Reservation	2,825
Rehabilitation of MDC Rinks and Pools	800*
Improvements of Victory Park in South Boston	1,500
Renovation of Boat Club on Esplanade	600
Reconstruction of Franklin Park Zoo	7,987

\* Only a portion of the authorized amounts for these expenditure categories will directly benefit Boston.

Another state capital spending bill recently signed by the Governor is the transportation bond bill. There are a number of general authorizations in this bill that will benefit Boston, but with the exception of \$1.0 million authorized for boat services to and from Boston, none of the items in the bill provides funds specifically for use in Boston. Instead the bill primarily authorizes spending for statewide transportation improvement programs. In order to gain some understanding of the transportation-related capital improvements scheduled for Boston, it is necessary to examine the plans of individual agencies, such as the Mass. Department of Public Works (MDPW), the MDC and the MBTA.

There is one other portion of the transportation bond bill which will affect Boston significantly. Section 17 of the bill authorizes the sale of up to \$135 million/yr. in State and MBTA bonds for MBTA capital improvements. In the Boston metropolitan region's 1984 Transportation Improvement Program, the MBTA outlines plans for capital improvements through 1988 that require only \$70 million/yr. in State and MBTA bonds. This yearly figure is, of course, dependent upon the availability of federal funding. Still, considering that the MBTA is already planning for some decline in federal funding and that the State bonding authorization of \$135 million/yr. is nearly twice as high as the MBTA presently expects to require, prospects seem good that the MBTA will be able to continue its ambitious and sorely-needed capital improvement program.

A third capital spending document recently produced by the State is the capital spending section of the Governor's fiscal 1985 budget request. The Governor's fiscal '85 capital budget request is intended

to supplement the capital spending authorizations of the capital outlay and transportation bond bills previously discussed. Although the Governor's budget request is yet to be debated, altered and passed by the legislature, there are important items specifically for Boston which deserve mention. As shown in Table 25, the Governor has recommended \$3.5 million for the design of improvements to the Deer Island Treatment Plant, as well as over \$8.5 million for improvements to other parts of the water and sewer systems directly serving Boston. In addition, \$5.0 million is recommended for the construction of a physical education building at Roxbury Community College with another \$2.3 million for the construction of playing fields at Bunker Hill Community College. Another important item is the \$21 million recommended for energy improvements and deferred maintenance for the State's buildings, many of which are in Boston.

In addition to the nearly \$20 million in capital projects in Boston which the Governor has recommended, he has decided not to recommend at least another \$20 million which were requested by the State's agencies. The Boston projects which were denied or referred for further study include over \$10 million for improvements to U.Mass/Boston facilities and \$5 million for a State Park Center at Long Island. Another \$8 million for improvements to the Brighton and Dorchester district courts were also recommended for further study pending the legislature's decision on the creation of a Court Facilities Commission. Table 25 includes a list of all the projects which were omitted from the Governor's fiscal '85 capital budget request.

Although the FY84 capital outlay and transportation bond bills together with the Governor's proposed fiscal 1985 capital budget offer

GOVERNOR'S FISCAL 1985 CAPITAL BUDGET REQUEST  
PROJECTS IN BOSTON

<u>Projects Included in Request</u>	<u>Amount</u> <u>(\$000s)</u>
Repairs to Suffolk County Courthouse	400
Design of Improvements to Boston Low Sewer Service	1,000
Design of Deer Island Sewage Treatment Upgrade	2,000
Design of Deer Island Sludge Incineration/Dewatering	1,500
Neponset Valley Relief Sewer (West Roxbury)	7,500
Water Valve Replacements in Boston	200
Construction of Physical Education Building at Roxbury Community College	5,000
New Playing Fields at Bunker Hill Community College	2,323
Energy Improvements at U.Mass/Boston	400
Energy Improvements and Deferred Maintenance for State Owned Buildings	21,000
<u>Agency Submissions Rejected by Governor</u>	
Repairs to Seawall Along Charles River	300
Phase II Improvements to Victory Road Park (South Boston)	2,500
Repairs and Improvements at U. Mass/Boston	3,209
Renovation of Downtown Center U. Mass/Boston	7,403
Boston Harbor Islands State Park Center at Long Island	5,000
Improvements to Dorchester District Court	3,000
Improvements to Brighton District Court	5,000
Neponset Valley Relief Sewer	1,000



some insight into the capital spending priorities of the Commonwealth, the legislature has made numerous prior capital spending authorizations of which significant amounts are yet to be expended. Moreover, once a specific project or spending category has been authorized, the timing and execution of the project is primarily left to the various state agencies. Consequently, in order to obtain project specific information on yearly state capital investment in Boston, it is necessary to examine the capital investment plans of the individual state agencies.

#### Massachusetts Department of Public Works

The Massachusetts Department of Public Works (MDPW) is responsible for over thirty miles of highways and 168 bridges located in Boston. Although thirty miles may not seem like a tremendous amount of roadway, the Boston highways which MDPW maintains, such as the Southeast Expressway, the Central Artery and Rte.193, are all critical elements of the economy of the City and the region. In addition to its responsibility for State bridges and major roadways, MDPW also approves or denies the bulk of state and federal funds for reconstruction of City-owned streets and bridges. As a guide in allocating bridge funds, MDPW maintains a computer file containing information on the condition of all bridges in Boston. Unfortunately, information on the condition of many City-owned bridges and almost all MBTA bridges is quite poor or nonexistent.

MDPW's bridge and highway reconstruction activity has fluctuated substantially in the years 1975-83. As shown in Table 26, the total cost of MDPW highway and bridge contracts in Boston was greatest in the years 1975-78 averaging almost \$20 million/yr. In 1980 the value of MDPW contracts in Boston was less than one million dollars, but by 1982



Table 26

MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS  
HIGHWAY AND BRIDGE CONTRACTS ADVERTISED 1975-1983

Type of Contract	1975-78	1979	1980	1981	1982	1983
				(\$000s)		
Street and Highway Improvement Contracts <sup>2</sup>	30,763	7,725	0	7,522	2,955	412
Bridge Repair and Reconstruction Contracts	27,634	327	978	1,479	8,190	2,100
Total MDPW Capital Improvement Contracts	58,397	8,052	978	9,001	11,145	2,512

Funding Analysis (\$000s): Approximately 62,100 or 68% federal funds  
and 29,900 or 32% state funds.

- 1 Amounts represent construction costs.
- 2 Construction of crosstown street and reconstruction of parts of Columbus Avenue, Tremont Street, and Huntington Avenue totaled 50% of MDPW highway contracts 1975-83.
- 3 Bridge improvements on McTiellan Highway and Rte 93 together with construction of the Little Mystic River Bridge and replacement of Dorchester Bay Bridge (MDC) totaled 75 % of MDPW bridge contracts 1975-83.

the level of new highway and bridge contracts had risen to over \$11 million.

The bulk of MDPW's highway and bridge contracts in Boston since 1975 were for a few major projects. With respect to highway projects, the construction of Crosstown St. in Roxbury and Urban Systems funding for the reconstruction of several major streets in the South End represented fifty percent of MDPW contract awards. As for bridge work, numerous bridge improvements along McClellan Highway and Rte. 193, together with construction of the Little Mystic River Bridge accounted for the bulk of MDPW bridge expenditures since 1975.

With regard to MDPW highway and bridge improvements in Boston which are currently underway or planned, the most well-known are the proposed Central Artery depression/Third Harbor Tunnel and the ongoing Southeast Expressway reconstruction. These two projects have been well-publicized for good reason; their cost and importance dwarf all other highway and bridge work currently approved for Boston.

Federal interstate highway funding for the Central Artery/Harbor Tunnel project is still being considered by Congress and the federal Department of Transportation. However, if the project is approved as it is presently envisioned, it will cost an estimated \$2.2 billion dollars stretched out over ten to fifteen years of construction time. The benefits of the Central Artery/Harbor Tunnel project are numerous. They include a 65 percent reduction of traffic congestion along the Artery, sufficient capacity to meet projected vehicular use for the next twenty to thirty years, greatly improved access to Logan Airport and the Port of Boston, and the creation of twenty acres of land and air rights in downtown Boston.

The reconstruction of the Southeast Expressway from Massachusetts Avenue in Dorchester to Rte 128 in Quincy has also received a good deal of public attention. Reconstruction of the roadways and bridges along the Expressway, estimated to cost \$100 million, has already begun to disrupt traffic patterns for commuters and truckers. Moreover, the work will not be completed until November 1985. The reconstruction had, however, become an absolute necessity due to the crumbling road surface and deteriorated condition of the bridges along the Expressway.

Although the Artery/Tunnel and Expressway projects have received the most attention, it is important to note that MDPW has approved \$15-20 million/yr. in other bridge and highway projects in Boston through 1986. (See Table 27.) The most important additional highway projects currently approved are the reconstruction of several major City streets in the South End, Roxbury and Dorchester. Also noteworthy is the four-phased installation of a Citywide computerized traffic control system beginning in 1985. With respect to bridge reconstructions, the largest projects, other than the Expressway, are the \$12 million Harvard Bridge (Mass. Ave. over the Charles) reconstruction scheduled for 1985 and the \$10 million Northern Ave. Bridge reconstruction presently scheduled for 1986.

As mentioned, MDPW has responsibility for approving state and federal funds, not only for bridges owned by the Commonwealth, but also for City-owned bridges. The Department also attempts to maintain up-to-date records of all bridges in Boston and throughout the State. Ownership of Boston's bridges, however, are divided among MDPW, the City of Boston, the MDC, the MBTA, MassPort and the Turnpike Authority. MDPW

Table 27  
HIGHWAY AND BRIDGE IMPROVEMENT PROJECTS CURRENTLY APPROVED BY  
MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS

Street and Highway Improvements	Neighborhood	Estimated Starting Date		1987-1990	Currently Unscheduled
		1984	1985 1986 (\$000's)		
Atlantic Ave. Reconstruction	City Proper	1,500			
Blue Hill Ave. Reconstruction	Dorchester, Roxbury	3,500			
Boston Pedestrian Signal Improvements	Citywide				1,500
Central Artery Depression	City Proper, Chas.				1,300,000
Columbus/Tremont Reconstruction, Phase II	South End	7,000			
Commonwealth Ave. Improvements, Phase II	Allston/Brighton			11,000	
Dudley St. Extension	Roxbury		2,800		
Huntington Ave. Reconstruction, Phase III	South End, Roxbury				6,000
Main St. Reconstruction	Charlestown	3,800			
Park Plaza Streets	City Proper	1,200			
Southeast Expressway Reconstruction	Dorchester, S. Boston	64,088			
Rte I 93 Reconstruction	City Proper, Chas.				7,000
Rte 1A Resurfacing	East Boston				900,000
Third Harbor Tunnel & Seaport Access Road	S. Boston, E. Boston		5,760	4,800	
Traffic Control System-Phases I-IV	Citywide		2,300		
Washington St. Reconstruction	W. Roxbury			3,264	
Total Street and Highway Improvements Approved		81,088	10,860	14,264	2,214,900
Bridge Repair and Reconstruction					
Boston St. Bridge Deck Reconstruction over S.E. Expressway	South Boston		250		
Canterbury St. Bridge Reconstruction over Conrail	Hyde Park	1,000			NA
Columbus Ave. Bridge Replacement over Railroad	South End, Roxbury				
Harvard Bridge (Mass. Ave.) Reconstruction	City Proper		12,000		
Norfolk St. Bridge Reconstruction over Conrail	Dorchester		1,400		
Northern Ave. Bridge Reconstruction	S. Boston, City Proper			10,000	
Reservoir Rd. Bridge Deck Replacement over MBTA	Brighton				200
Southeast Expressway Bridge Decks Reconstruction	Dorchester, S. Boston	36,000			
Summer St. Bridge Reconstruction over Conrail	East Boston			500	
W. Fourth St to Sixth St. Bridge Reconstructions*	South Boston				1,445
West St. Bridge Reconstruction over Conrail	Hyde Park	1,300			
Total Bridge Repair and Reconstruction Approved		38,300	13,650	10,500	1,645
Total Highway and Bridge Improvements Currently Approved		119,388	24,510	15,300	2,216,545

Funding Analysis (\$000's): 2,133,793 or 89% federal  
251,614 or 11% state

\* Contingent upon decisions concerning the Seaport Access Road.

does not have sufficient personnel to make continual inspections of all Boston's bridges.

Table 28 summarizes the information on Boston's bridge conditions contained in MDPW's computer file. The table shows that there are a considerable number of MDPW bridges and City-owned bridges which are in poor structural condition and are eligible for federal funds for reconstruction or renovation. Bridges listed as being owned jointly by MDPW and the City of Boston are bridges in which the City has retained ownership of the wearing surface and the State owns the sub- and super-structures. Table 29 is simply a list of all the bridges in Boston which are known to be in unsafe or poor structural condition. Considering that reliable or comparable information is not available for forty percent of the City-owned bridges and all of the MBTA bridges, it is likely that there are additional bridges not listed in Table 29 which are in unsafe or poor condition.

Additional inspectors have been assigned by MDPW to assess the condition of all the bridges owned by the City of Boston. However, these inspections will not be completed before 1985. As for the MBTA's bridges, MDPW regularly offers a two-week bridge inspection training course, which it has urged MBTA personnel to attend. The last two MBTA employees who attended the course failed it. Hopefully, MBTA will, in the future, send better qualified personnel to the course.

Returning for a moment to Table 29, it can be seen that more than twenty bridges in Boston are known to be in unsafe or poor condition. Although all of these are eligible for federal and state funds for reconstruction, only eight are currently approved for reconstruction by MDPW. Officials at MDPW indicated that in general ample federal and



Table 28

CONDITION OF BRIDGES IN THE CITY OF BOSTON<sup>1</sup>

Owner	Total	# With Overall Structural Rating <sup>2</sup> of		# with AASHTO Rating <sup>3</sup> of	
		2	3	L50	50-75
Mass. Turnpike Authority	54	0	0	0	10 <sup>4</sup>
MassPort	3	0	0	0	2 <sup>5</sup>
MBTA	34	(Reliable data unavailable)			
MDC	45	1	0	10	10
MDPW	134	0	1	11	25
MDPW, City of Boston <sup>6</sup>	34	7	7	25	10
City of Boston	26 19	1	3	8	3
		(Reliable data unavailable)			

<sup>1</sup> Does not include pedestrian bridges, bridges carrying railroads other than MBTA or bridges less than 20' in length.

<sup>2</sup> A structural rating of 2 or less means bridge is unsafe and should be closed. A rating of 3 means that deterioration has significantly lowered the bridge's weight capacity.

<sup>3</sup> AASHTO ratings use a scale of 1 to 100. A rating of less than 50 indicates the bridge is eligible for federal aid for replacement. A rating of 50 to 75 indicates the bridge is eligible for federal aid for renovation.

<sup>4</sup> All MTA bridges have an AASHTO rating of 65 or greater.

<sup>5</sup> North and Southbound lanes of Tobin Bridge, AASHTO rating of 65.

<sup>6</sup> See text for explanation.

Source: MDPW computer printout of bridge inspection data dated 1/1/84.

## BRIDGES IN BOSTON IN UNSAFE OR POOR CONDITION

Bridge	Owner(s)	Overall Structural Rating <sup>1</sup>	AASHTO <sup>2</sup> Rating
Canterbury St. over Conrail <sup>*</sup>	MDPW, City	2	20
Gardner St. over Conrail	MDPW, City	2	20
Mass. Ave. over Charles River <sup>*</sup>	MDC	2	20
Norfolk St. over Conrail	MDPW, City	2	9
Northern Ave. over Ft. Point Channel <sup>*</sup>	City	2	20
Southampton Street over MBTA	MBTA	2	20
West St. over Conrail	MDPW, City	2	20
West Second St. over Conrail <sup>*</sup>	MDPW, City	2	41
West Sixth St. over Conrail <sup>*</sup>	MDPW, City	2	17
West Third St. over Conrail	MDPW, City	2	33
Bellevue St. over Conrail	MDPW, City	3	17
Bolton St. over Conrail	MDPW, City	3	40
Broadway & Albany over Conrail	MDPW, City	3	19
Clarendon St. over Conrail	MDPW, City	3	17
Congress St. over Ft. Point Channel	City	3	48
Cummins Highway over Conrail	MDPW, City	3	30
Harvard St. over Conrail	MDPW, City	3	25
Hyde Park Ave. over Mother Brook	City	3	23
Summer St. over B Street <sup>*</sup>	City	3	30
Summer St. over Conrail <sup>*</sup>	MDPW, City	3	13
W. Fourth St. over Conrail <sup>*</sup>	MDPW, City	3	30
W. Fourth St. over MBTA	MBTA	3	20

<sup>1</sup> See note 2, Table 28 for description of Structural Rating.

<sup>2</sup> See note 3, Table 28 for description of AASHTO Rating.

<sup>\*</sup> Indicates the bridge is currently scheduled by MDPW for reconstruction 1984-86. See Table 22.

state funds are available for bridge reconstruction, but that a shortage of bridge engineers has slowed bridge reconstruction work in Boston and elsewhere.

In the opinion of MDPW officials, the outlook for funding of major highway projects in Boston is similarly optimistic. One important exception to this optimism is Urban System funds. The Urban Systems program provides 75 percent federal and 25 percent state funding for the reconstruction of major City-owned thoroughfares. Urban Systems improvements have often been an important component of the City's redevelopment efforts in particular areas. At present, the City has submitted to MDPW more than enough projects to absorb its allotment of Urban Systems funds through 1988. It is evident that supplemental funding sources will be needed to complete the major street improvements which are an important element of the City's community and economic development plans.

Ranging from such monumental projects as the Central Artery depression and Third Harbor Tunnel to small but still important ones, such as the rebuilding of Main St. in Charlestown, the MDPW plays an important and pervasive role in improving and maintaining Boston's infrastructure. It also plays a key role as allocator of bridge reconstruction funds. The size and number of the highway and bridge projects currently approved for Boston by MDPW together with Boston's additional needs in this area will guarantee a pivotal role for MDPW in the City's infrastructure improvement efforts.

### Metropolitan District Commission

The Metropolitan District Commission (MDC) is an agency of the Commonwealth established to administer a network of roadways, parks, recreational facilities, water supply and sewage treatment systems. At present, the Commission's multiple responsibilities are divided into three divisions, Parks and Boulevards, Water, and Sewerage.

#### Parks Division

The Metropolitan Parks District encompasses various major roadways, parks and special facilities for 37 cities and towns in the Boston metropolitan area. In the City of Boston, the MDC Parks Division plays a very important role in transportation and recreational activities. The MDC administers several major roadways and bridges in the City which provide commuter access to Boston and facilitate intra-city transportation. As seen from Table 30, MDC expenditures for the repair or reconstruction of roads and bridges in Boston exceeded \$13 million during the period 1979-1983. This sum represents nearly forty percent of total MDC capital investment in Boston during this period.

Turning from transportation to recreation, the parks, pools, beaches and rinks of the MDC's Parks Division provide Bostonians with opportunities for easily accessible, diverse and low-cost recreational activities. Over the past four years, the Parks Division has made investments to improve Boston's rinks and waterfront recreational facilities. In 1979 the Division expended over \$9 million for the development of a Tropical Forest Pavilion in Franklin Park. For 1984 and 1985, the MDC is also planning over \$20 million improvements to the Franklin Park Zoo. As part of the capital outlay bill, the legislature

Table 30

## SUMMARY HDC CAPITAL INVESTMENT PROGRAM, FY1979-1989

Investment Category	Neighborhood	Contract Awards				Projected Contract Awards							
		1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	
I. Contracts in Boston													
Park Development/Restoration													
Franklin Park	Roxbury	9,241					8,987	11,500					
Charles River Basin	Central Bos.							300	2,500	3,500	2,000		
Improvements to Victory Road Park	South Boston												
General Park Expenditures	Citywide	367	1,324	635	508	167		1,500	2,500				
Rink Rehab and Improvements			733	34	1,212			570	75	250	250	250	
Repairs to Admin. Buildings-Parks			8	58		9		300	500	3,000			
Total Parks Expenditures		9,608	2,065	727	1,720	176	10,487	15,170	3,075	6,750	2,250	250	
Roadways and Bridges													
Sidewalk & Road Repair/Rehab	Citywide	916	4,001		2,258		(Information not available)						
Bridge Repair/Reconstruction				3,853	610	1,221							
Emergency Road/Bridge Repairs		135	35										
Total Roadways and Bridges		1,051	4,036	3,853	2,868	1,221							
Water Supply System													
Repair/Renovate/Replace	Citywide	30	6	85	9		954	300	3,333	10,000			
Increase Water Transmission Capacity		225	356				2,234	1,185	13,000				
Total Water Supply		255	362	85	9		3,188	1,485	16,333	10,000			
Sewerage													
Deer Island Investments	East Boston												
Increased GSO Capacity	Citywide		226	635	144	3,718	13,151	3,500	48,000	70,000	200,000		
New Pumping Stations	Citywide						5,250	7,500					
Misc. Repairs and Other Expenditures		51	43	47	10	4	2,515		28,600				
Total Sewerage		51	269	682	154	3,722	21,195	11,000	76,600	70,000	200,000		
Total Amounts of Contracts in Boston		10,965	6,732	5,347	4,751	5,119	34,870	27,655	96,008	86,750	202,250	250	



Table 30 (continued)

## SUMMARY MDC CAPITAL INVESTMENT PROGRAM, FY1979-1989

Investment Category	Contract Awards				Projected Contract Awards						
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
III. Other Contracts Which Include or Affect Boston											
Parks and Facilities	315	448	501	673	811	4,410	3,675	2,800	5,000	2,000	1,000
Tree Planting/Removal				54	252		100	50	50	50	50
Roadway and Sidewalk Repairs	800	579	564	23	626		Information Not Available				
Water Supply System											
Quabbin Reservoir		46			30	50	430				
Wachusett Reservoir		89	17	152		430	155				
Sudbury Reservoir	23					1,584	15,000				
New Equipment						2,796		5,200	5,200	200	200
Improve Reservoir System							25,000	25,000	25,000	25,000	
General Rehab/Improvements							6,873	4,700	1,700	700	700
Total Water System	23	135	17	152	30	4,350	50,254	34,900	31,900	25,900	900
Sewerage System											
Nut Island	34			188	2,727	13,914		1,000	2,500		120,000
Other Expenditures			107	32		190					
Total Sewerage System	34		107	220	2,727	14,104		1,000	2,500		120,000
Total Other Contracts	1,172	1,162	1,189	1,122	4,446	24,928	54,029	38,750	39,450	27,950	121,950
MDC Capital Investment Studies and Design Plans (Studies/designs costing less than 20% of total project costs have been included in construction contract listings)									434	55	
Total MDC Investments Within or Affecting Boston	12,137	7,894	6,536	10,270	10,135	68,652	83,533	135,192	126,265	230,200	122,200

Sources: MDC Contract Files and miscellaneous internal capital planning documents.

has thus far authorized only \$8 million for this purpose. Other MDC parks improvements scheduled for Boston include extensions of parklands along the Charles River and improvements to the Boston Harbor Islands State Park. It should also be noted that Boston residents derive significant benefits from MDC recreational areas outside of the City. Chief among these are the Blue Hills Reservation in Milton and the Nantasket and Revere Beaches.

Over the past several years, MDC recreational services have suffered from both managerial and financial difficulties. Authorized staff positions have declined from over 1,400 in 1976 to 500 in 1984. General maintenance has been deferred and the lack of funds has slowed the pace of major renovations, new construction and acquisition of additional open space. As a result, most facilities are between 25 and 50 years old, suffer from frequent equipment failures and are open for fewer hours and reduced seasons.

To improve these conditions, the MDC is planning, contingent upon funding by the legislature, the expenditure of nearly \$38 million for the renovation of facilities and the extension of parklands in Boston from 1984 to 1989.

#### Water Division

The MDC supplies water to 45 communities in metropolitan Boston and central Massachusetts. In Boston's case the MDC sells water "wholesale" to the BWSC which in turn provides for local distribution. The MDC's capital investments on behalf of Boston's fresh water are concentrated in two areas. First, the MDC maintains fresh water reservoirs for the City and is responsible for the development of new water sources.

Second, the MDC administers water pumping stations and key water mains in Boston which bring water to BWSC pipelines.

The entire MDC water system, including Boston, is facing a long-term water supply deficiency. Aggregate consumption of the MDC user communities exceeds the average safe yield of the MDC's water supplies. Current MDC estimates project the need for an additional sixty million gallons of water per day (MGD) by 1990, 75 MGD by 2000, and 120 MGD by 2020. At present, Boston's average consumption is below its safe yield allotment, but Boston's water consumption is expected to exceed its current safe yield by 1990. In response to the system-wide water shortage, the MDC plans to reduce leakage by modernizing facilities, promote user conservation and develop new water supplies.

MDC's water system investment program will require a large increase over past investment levels of the Water Division. Table 30 shows that from 1979-83 MDC expenditures in Boston for the improvement and expansion of pumping stations and connections to the BWSC system totaled roughly \$700,000. Another \$350,000 was invested during this period for improvement of MDC's major reservoirs. In contrast, MDC water system capital investment program, 1984-89 calls for \$31 million in expenditures in Boston itself and another \$150 million to improve and expand the MDC's reservoir system which serves Boston.

#### Sewerage Division

The MDC's regional sewerage system provides services to 43 cities and towns including Boston. As with the water supply and distribution system, responsibility for Boston's sewerage system is shared between the MDC and the BWSC. The BWSC operates the City's sewage collection

system, while the MDC operates primary treatment plants at Deer and Nut Islands. The Nut Island plant, although not located in Boston, serves West Roxbury, Hyde Park, as well as parts of Roxbury, Dorchester and Roslindale. In addition to the Deer and Nut Island treatment plants, the MDC is also responsible for the combined sewer overflow stations (CSO), and some of the major sewage pumping stations, wastewater interceptors and headwork facilities in Boston.

At present, the Deer and Nut Island treatment plants, as well as other parts of the city's sewerage system operated by the MDC are incapable of satisfactorily handling the volumes of sewage flowing to them. Leaks, overflows and bypasses from MDC facilities have created major pollution problems in Boston Harbor. The MDC's Sewerage Division has recently been sued by the City of Quincy, the Conservation Law Foundation and the EPA for violation of environmental regulations and permits. As a result, the MDC has been ordered to immediately upgrade the Deer and Nut Island treatment plants, replace the East Boston Pumping Station, and construct CSO facilities at Constitution Beach, Commercial Point and Fort Point. Blame for this dire situation cannot be attributed solely to the MDC. Lack of clear financial and political support from the Massachusetts legislature, together with delays and policy reversals by the EPA are also to blame for the pollution in Boston Harbor.

Widespread public concern with Boston Harbor's deteriorating water quality dates back to the publication in 1968 of the Federal Water Pollution Control Administration's Report on Pollution of the Navigable Waters of Boston Harbor. The study found that "based upon biological conditions about seven square miles, or thirty percent of the Harbor,

were grossly polluted". A comprehensive plan for improving this situation, known as the EMMA report, was completed in 1975. However, very few of the \$1.2 billion in sewerage system capital investments recommended in the EMMA plan have been completed. Table 30 shows that between 1979 and 1982 less than \$1.5 million in contracts were awarded for improvements to the Nut and Deer Island treatment plants and for CSO and sewage pumping facilities in Boston. In 1983 contracts awarded for improvements to these facilities jumped to approximately \$11 million, but even this level of investment is dwarfed by the nearly \$500 million that the MDC is hoping to invest in these facilities between 1984-89. Moreover, if the EPA denies the MDC's appeal for a waiver of secondary treatment, the long-term costs of improving the MDC's sewage treatment operations could exceed two billion dollars.

The EPA is currently reviewing eight sewage treatment options for the Boston region including both primary and secondary treatment alternatives. Several of the options being considered entail the construction of sewage treatment facilities of varying sizes on Long Island. For this reason, the EPA and the Commonwealth's Office of Environmental Affairs have requested that the City of Boston outline what plans it has for future uses on Long Island.

#### Financing MDC's Capital Investment Program

The MDC's capital investment plans are, in a word, ambitious. Such ambition, however, is sorely needed. With the possible exception of some roadways and recreational facilities, almost all of the MDC facilities serving Boston have suffered in recent years from poor maintenance and/or under-investment. Franklin Park Zoo stands in need



of major renovations, the metropolitan area's water supply is inadequate to meet current and future demand and the region's sewage treatment system is presently unable to provide even the modest level of treatment for which it was designed. Given these needs, the large capital investment increases planned for the MDC's parks, water, and sewerage systems seem well justified.

The major issues yet to be resolved are the administrative and financial mechanisms that will be used to carry out the investments which the MDC has identified. The majority of the MDC's planned investment program is scheduled for the Water and Sewer Division. However, the Governor has recently submitted legislation which would create a semi-autonomous public authority to operate and maintain the metropolitan area's water and sewerage systems. The main benefit of creating such a metropolitan water and sewer authority is that the new authority would be capable of, and most likely required to, set fees and charges at least sufficient to cover all capital and operating costs. Such a structure would allow the authority to issue revenue bonds to finance capital improvements. Under Proposition 2½, MDC municipal assessments can at most increase by only 2½ percent per year. Such a rate of increase would not nearly be sufficient to pay the debt service resulting from the necessary capital improvements to the MDC's water and sewerage systems.

Whatever organization is eventually given responsibility for the MDC water and sewerage systems, it will have to contend with a reduction in federal funding. In October of 1984, the federal share of major sewerage system capital investments will be reduced from 75 to 55

percent. For the new authority, this decline in federal funding combined with the large backlog of water and sewerage system investment needs will almost certainly necessitate substantial increases in water and sewer charges to communities presently served by the MDC system. If a separate water and sewer authority is not created, the MDC's capital investment program would be severely hindered by the need to balance the assessment restraints of proposition 2½ with the cost of service user charges required for federal funding.

At present, because Boston uses approximately one third of the MDC's water supplies and generates about the same proportion of MDC systemwide sewage volumes, Boston pays about one-third of total MDC water and sewer assessments. It is important to note that Boston's water and sewer assessments are paid for by the BWSC with these costs passed on to residents through the BWSC's own fees and charges. Under this arrangement increases in MDC water and sewer assessments do not affect the use of Boston's limited public revenues. Such is not the case for MDC Parks Division assessments which are paid by the City of Boston out of its own revenues.

Although the future funding arrangements of the MDC's Parks Division are more stable than those of the MDC's other divisions, funding levels are still subject to considerable uncertainty. Funding for Parks Division's projects is first authorized in the State's capital budgets. Once authorization is received, the Division's planning and construction cycle for individual projects may be stretched out over several years. Of the Parks Division planned capital expenditures shown in Table 25, several have received funding authorizations in the State's fiscal '84 capital budget or are recommended for authorization in the

Governor's fiscal '85 capital budget request. Funding authorizations which have not yet been received are the fiscal '85 amounts scheduled for Franklin Park Zoo and Victory Road Park, as well as the expenditures on the Charles River Basin parks and the MDC's headquarters building scheduled for 1985-88. In the cases of the Franklin Park Zoo restoration and Victory Road Park improvements initial funding was authorized in the fiscal '84 capital budget. Further funding may follow upon the completion of the work permitted by the 1984 authorizations.

As for the roadway and bridge expenditures of the MDC's Parks and Boulevards Division, no capital investment program has yet been made available, nor is there any project specific information included in the State transportation bond bill. That bill does however authorize MDC to expend \$27.7 million for transportation improvements. Presumably, these capital investments will occur over a number of years. The details of where and when are presently unknown.

#### Massachusetts Bay Transportation Authority

The MBTA operates a widespread network of subways, trolleys, bus routes and commuter rail lines. With the exception of a number of private commuter bus lines, the MBTA is responsible for nearly all of Boston's intrametropolitan public transportation. In recent years the bulk of the MBTA's capital investments have gone toward the Northwest Extension of the Red Line and the Orange Line relocation also known as the Southwest Corridor Project (See Table 31). In addition to these two predominant projects, significant amounts have also been spent on

Table 31

SUMMARY OF MBTA CAPITAL APPROPRIATIONS, 1978-1983 AND  
CAPITAL SPENDING PLANS, 1984-88+  
(\$000+)

	Neighborhood(s)	Previous Appropriations					Future Capital Needs			
		1978	1979	1980	1981	1982	1983	1984	1985-88	1988+
Projects At Least Partially in Boston										
Orange Line Relocation	S. End, Roxbury, J. P.	55,844	25,430	115,335	223,529	182,784	109,000	0	29,400	0
Green Line Improvements	All./Brl., J. P., Central	5,398	11,814	0	0	13,876	0	0	0	9,000
Commuter Rail Improvements & Expansion	Citywide/Metro	25,325	0	653	7,203	5,695	11,400	44,000	163,000	100,000
Track, Tunnel & Station Improvements	Citywide/Metro	14,096	8,210	36,791	41,010	25,712	9,500	71,000	423,000	15,000
Purchase & Reconstruction of Transit Vehicles	Citywide/Metro	23,713	16,625	50,409	22,044	28,125	93,600	70,000	81,000	53,000
New Bus Garages	Charlestown, J. P.	0	0	5,690	4,493	0	0	2,000	25,000	0
Power System Improvements	Citywide/Metro	18,136	0	11,395	12,532	3,600	10,800	30,000	77,500	80,000
Signal/Commun., Safety & Efficiency Improvements	Citywide/Metro	729	5,265	0	0	14,898	5,500	30,000	45,000	0
Transit Line Connectors & Circumferential Transit	Citywide	0	0	0	0	0	0	4,000	138,000	271,500
Miscellaneous Plant Improvements	Citywide/Metro	0	22,111	0	5,875	5,756	12,000	17,500	50,000	5,000
Purchase of Rolling Stock Replacement Parts	Citywide/Metro	0	0	0	0	0	11,000	10,000	40,000	50,000
Handicapped & Elderly Access & Transit Vehicles	Citywide/Metro	0	0	0	0	600	2,100	24,000	8,200+	NA
Total Projects At Least Partially in Boston		143,241	89,455	220,273	316,686	281,046	264,900	272,500	1,080,100+	583,500+
Projects Entirely Outside of Boston										
Red Line Extension to Alewife and Station Improvements	Metro Only	160,931	223,494	107,500	12,264	12,412	14,100	28,000	0	0
Everett Maintenance Facility	Metro Only	1,107	1,924	9,252	2,732	14,780	0	0	0	0
Orange, Blue, Green, & Red Line Extensions	Metro Only	0	0	0	0	0	0	0	125,000	510,000
Other Projects	Metro Only	0	0	3,125	0	1,295	500	10,000	145,500	0
Total Projects Outside of Boston		162,038	225,418	119,877	14,996	28,487	14,600	38,000	270,000	510,000
Total All MBTA Capital Appropriations and Future Needs		305,279	314,883	340,150	331,682	309,533	279,500	310,500	1,350,100	1,093,500

<sup>1</sup> Includes MBTA expenditures planned for North and South Stations.

Funding Analysis: From 1978-1983 1,479,356 or 79% of MBTA capital appropriations were provided by the federal government, while 395,708 or 21% of MBTA capital appropriations were provided by State bonds.

For the period 1984-1988 50-60% of programmed projects are expected to be funded. Federal/state breakdown is expected to continue around 80% federal, 20% state.

Sources: MBTA response to BRA Infrastructure Survey Questionnaire and MPO Transportation Improvement Program 1984-88.



systemwide track, tunnel and station improvements, purchase and reconstruction of vehicles, and commuter rail improvements.

With Orange Line relocation and Red Line extension projects nearing completion, capital investment priorities through 1988 are shifting to a more intensive commuter rail improvement program and a number of further improvements to the transit system. Included under both of these headings is almost \$300 million of work underway and planned at North and South Stations.\* This work includes upgrading the commuter rail and transit facilities at both stations together with construction of bus terminals and other improvements at South Station. Also included under the heading of transit system improvements are further investments to upgrade track, tunnel and electrical systems, as well as miscellaneous efficiency and safety improvements. Important elements of the MBTA's longer range goals (1988 and beyond) are the construction of transit line connectors downtown and provision of circumferential transit in the corridor connecting Charlestown, Cambridge, Kenmore/Fenway and Roxbury.

As can be readily observed from Table 26, the MBTA envisions an aggregate level of capital investment through 1988 which averages between \$300 and \$350 million per year. This is roughly equivalent to the Authority's past investment levels. The question then is whether past federal and state funding levels can be expected to continue. As previously mentioned, the MBTA projects the need for approximately \$70 million per year in State bonds through 1988. This is only slightly more than half of the annual bond ceiling authorized for the MBTA by the transportation bond bill.



The MBTA future capital investment program which is shown in Table 26 has been drawn from the 1984-88 Transportation Improvement Program (TIP) of the Metropolitan Planning Organization (MPO). The TIP is essentially a list of all transportation projects which have been identified by State, regional and local transportation planners as being eligible for and potentially deserving of federal and state funding. Projects scheduled for the first year of the TIP, in this case fiscal 1984, are relatively firm candidates for funding. The selection and funding of projects listed for later years becomes progressively more uncertain. MBTA staff report that in the past about fifty percent of the transit projects listed in the first year of the TIP have received funding in that year. Projects listed for fiscal 1984 seem to be no exception. Out of more than \$310 million in MBTA capital projects listed in the TIP for fiscal 1984, a total of \$150-175 million in federal grants and MBTA bond funding is expected. The breakdown between the federal and local (MBTA bonds) shares is expected to continue to be approximately eighty percent federal and twenty percent local through fiscal 1984.

With regard to the MBTA's capital investment plans through 1988, it is expected that when the federal Interstate Transfer funds are depleted in 1985, federal funding levels will decrease from the current \$120-140

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\* The reconstruction of the MBTA bridge and piers recently damaged by fire is of first priority at North Station. Fortunately, MBTA's insurance policy will pay for these repairs.

million dollar level to between \$80 and \$100 million. Table 31 summarizes the more than \$1.3 billion in MBTA capital needs listed in the TIP for the four-year period 1985-88. This four-year total translates to a yearly average of more than \$325 million, for which perhaps \$100 million per year of federal funding will be available. If MBTA bonds are used only to match federal funds then the historical average of eighty percent federal, twenty percent local, will continue through 1988. The result would be an MBTA capital investment program of only \$125 million per year, only slightly more than one-third the level of identified annual capital needs.

There is, however, reason to believe that annual MBTA capital investments will exceed \$125 million over the next several years. The State's Transportation Bond Bill authorizes \$207 million in MBTA bonds of which not more than \$135 can be issued in any one year. In addition, the bill for the first time allows MBTA to issue bonds for projects for which federal matching funds are not available. In other words, the bill allows the MBTA to finance some projects completely with its own bonds. Of course, it is always preferable to attract matching federal funds, but in instances where this is not possible MBTA now has the flexibility to fund such projects completely on its own. This flexibility, combined with the level of MBTA bonding authorized in the Transportation Bond Bill will likely allow for an MBTA capital improvement program through 1986 that totals close to \$200 million per year.

Massachusetts Port Authority

As its name implies MassPort has traditionally served the City of Boston and the Commonwealth of Massachusetts by constructing, maintaining and operating Logan Airport and several seaport facilities. The Tobin Bridge is also owned and operated by MassPort. However, in addition to MassPort's more traditional transportation-related infrastructure, the Authority has also begun to provide the infrastructure necessary for several large-scale, mixed-use developments on various piers and waterfront properties.

In recent years, MassPort has consistently been able to generate a level of revenues from fees, rent, and investment returns which exceed its operating expenditures. This operating surplus has provided MassPort with both current funds and revenue bonding capacity with which to expand and maintain its facilities. As shown in Table 32, MassPort's infrastructure expenditures in Boston between fiscal 1978 and 1983 exceeded \$272 million. An additional \$95 million in capital investment is underway or planned for fiscal 1984 and 1985. The majority of Massport's previous and planned capital investment from 1978-1985 is in Logan Airport, but substantial amounts have also been budgeted for the Tobin Bridge, the marine terminals and several development sites.

Several ongoing projects, such as the construction of the MassPort Marine Terminal, the renovation of Terminal C at Logan and varied developments at Bird Island Flats, Fish Pier and Commonwealth Pier are expected to dominate MassPort's capital investment in the near future. In the intermediate term, expansion of the air facilities at Hanscom Field in Bedford and private development of MassPort's East Boston Piers

Table 32

**SUMMARY OF MASSACHUSETTS PORT AUTHORITY CAPITAL INVESTMENTS, 1979-83;  
FUTURE PLANS 1984-85  
(\$000s)**

	Neighborhood(s)	Past Investments				Future Plans 1984-1985	
		1978	1979	1980	1981	1982	1983
Tobin Bridge		38	158	2,382	5,001	2,503	2,475
Maritime							
Moran Terminal	Charlestown	1,000	81	873	2,613	2,224	113
Mythic Pier	Charlestown	12	29	275	852	2	134
Castle Island/Conley Terminal	South Boston	331	88	2,945	17,598	14,050	927
E. Boston Pier	East Boston	0	0	28	88	0	39
Army Base	South Boston	0	0	0	0	26	506
Little Mystic Channel Bridge	Charlestown	0	81	165	201	213	19
Marine Terminal at DMIP	South Boston	0	0	505	9,037	13,118	1,820
Unallocated Equipment		0	1,359	3,283	386	99	485
Miscellaneous Capital Expenditures		0	70	143	0	0	0
Total Maritime		1,343	1,708	8,217	30,775	29,732	4,043
Infrastructure Investments for Development Projects							
Building Investments	South Boston	81	525	277	273	1,768	581
Pier Investments	South Boston, Charlestown	4,000	274	1,837	2,481	3,347	6,956
Bird Island Flata Infrastructure Investments	East Boston	0	0	95	1,072	4,111	4,181
Other Development Infrastructure Investment	South Boston	184	655	798	1,542	1,448	654
Total Development Investments		4,265	1,454	3,007	5,368	10,674	12,372
Logan Airport							
Airfield	East Boston	8,269	3,094	9,279	7,324	5,713	5,493
Terminal	East Boston	56,427	2,464	2,506	551	131	1,871
Buildings	East Boston	7,942	94	205	861	897	79
Water, Sewer, and Utilities	East Boston	663	60	903	376	1,241	1,157
Ground Transportation and Parking	East Boston	0	46	122	175	1,301	377
Unallocated Completed Facilities	East Boston	0	0	0	0	6,011	0
Noise Management	East Boston	88	596	1,326	1,761	1,325	141
Miscellaneous Expenditures/General Equipment Purchases	East Boston	3,341	325	970	473	913	1,332
Physical Planning/Environmental Studies	East Boston	0	0	172	768	66	5
Bird Is. Fl. Cargo Facilities Investments	East Boston	0	518	565	0	2,342	2,508
Total Logan Airport Investments		76,730	7,197	2,138	12,269	19,940	12,963
General Reserve		125	3	7	0	598	56
Total Capital Investments by MassPort		83,265	11,392	31,319	54,884	64,053	34,222
							95,234

Funding Analysis: (\$000s)

1978-83 Approximately 237,000 or 87% was derived from MassPort internal revenues or revenue bonds. The remaining 35,520 or 13% was obtained from government grants.

1984-85 Approximately 81,000 or 85% will come from MassPort revenues and revenue bonds. The remaining 14,000 is expected to come from outside grants.

Sources: MassPort response to BAA Infrastructure Survey Questionnaire; also MassPort Annual Report, 1983-84.



will also become priority projects. Over the longer term, MassPort's capital spending will be shaped by the need to integrate the northern terminus of the Third Harbor Crossing into Logan Airport's internal roadway system and by investments needed to complete the MassPort Marine Terminal. These two projects are likely to require \$150-200 million in the late 1980s and the 1990s. The following provides a slightly more detailed discussion of MassPort's recent capital investment record and future plans.

MassPort's Tobin Bridge is an important access route for Boston commuters and trucked goods. Each year the bridge conveys approximately 25 million vehicles between Boston and Chelsea. Since 1979 toll revenues from Tobin Bridge have hovered between \$5.5 and 6.0 million/year. These revenues have been more than sufficient to pay for the \$12.5 million in capital improvements to the bridge made between 1979 and 1983. Another \$6.2 million in capital improvements and maintenance for the bridge is budgeted for 1984 and 1985. This steady stream of investment, supported at least indirectly by the bridge's toll revenues, has kept Tobin Bridge in generally good condition.

MassPort's maritime facilities include several marine cargo terminals collectively known as the Port of Boston, as well as various fishing piers and waterfront development sites. The Port of Boston consists of the Conley Terminal in South Boston, the Moran Terminal in Charlestown and another terminal presently under construction on land leased from EDIC at the Boston Marine Industrial Park. Table 32 shows the investment record and current investment plans at these marine cargo terminals. In addition to the ongoing construction of the new Massport Marine Terminal at BMIP nearly \$8 million have been spent for the



modernization of Moran Terminal and another \$36 million for wharf improvements and construction of a new containerport facility at Conley Terminal. For 1984 and 1985 an additional \$9.6 million is scheduled for MassPort's three marine terminals. In the late 1980s and early 1990s much larger amounts of capital, perhaps as much as \$70 million, will be needed if the Massport Marine Terminal is to be successfully completed.

Despite these capital investments to modernize and expand the Port of Boston, the Port remains troubled. Total cargo tonnage passing through the Port has declined from 1,000,000 to 700,000 tons between 1979 and 1983. It is expected to fall another 100,000 tons by 1986. Technological change, high labor costs, frequent labor disputes and on-land traffic congestion have all been cited as contributing to the decline in the Port's business. For example, a recent labor dispute over the operation of the new containerport at Conley Terminal delayed the opening of that facility for almost two years. Yet, despite recent troubles, the Port of Boston still handles 51 percent of the dollar value of all shipments to and from Boston. This underscores both the importance of the Port to the City and the need to formulate policies to reverse its recent decline.

Though the Port of Boston is in the midst of hard times, the redevelopment of three of MassPort's underutilized piers seems certain to significantly benefit Boston's economy. The Boston Computer and Communications Market Center (BOSCOM) located at Commonwealth Pier, a new fish processing plant and office space at Fish Pier, plus the mixed-use redevelopment of Hoosac Pier are all underway or planned. At each of these sites MassPort has provided many of the infrastructure improvements needed to attract this wide range of private development.

Between 1978 and 1983, MassPort has expended more than \$22 million to upgrade the basic infrastructure of these development sites. However, important supporting infrastructure investments remain to be completed, both by MassPort and other agencies. These include the reconstruction of Northern Avenue and Northern Avenue Bridge, construction of the Seaport Access Road, and parking and boat terminal facilities.

Another area where MassPort is engaged in a public-private mixed-use development is at Bird Island Flats in East Boston. The Bird Island Flats development consists of a new air cargo facility to be constructed by MassPort and a research, production, office and conference complex to be known as the Massachusetts Technology Center. The Technology Center will be constructed privately, but it is supported by several million dollars in basic infrastructure investment by MassPort.

In the public mind, MassPort is primarily associated with Logan Airport. With Logan Airport likely to continue absorbing over half of MassPort's capital investment expenditures throughout the 1980s, this association on the part of the public is understandable. The expansion of Logan parallels the rapid growth of Boston's services-based economy and the region's high-tech development. From 1978 to 1982, despite a severe national recession, passenger service at Logan Airport increased by more than 21 percent, while air cargo tonnage increased by more than 32 percent. Facilitating and responding to Logan's increased passenger and cargo service has been over \$145 million in capital investment at the Airport since 1978. Another \$48 million is planned through 1985 and the integration of the proposed Third Harbor Crossing into Logan's

internal circulation system will entail upwards of \$100 million in capital improvements in the late 1980s and the 1990s.

Logan's rapid expansion has however incurred more than just capital investment costs. There have been a number of disputes between Logan's administrators and their East Boston neighbors. At issue has been the infringement of the expanding airport on East Boston's residential neighborhoods, as well as the noise pollution that has come with Logan's growth. MassPort has responded to these problems by promoting the use of quieter aircraft, changing flight patterns and investing in noise abating capital improvements at Logan and in the surrounding communities. MassPort's capital expenditures for noise abatement totaled \$5 million between 1978-83. This total is budgeted to reach nearly \$9 million by FY1986 (see Table 32).

As previously mentioned, MassPort has financed the bulk of its past capital investments out of current own source revenues and through the proceeds of revenue bond sales. MassPort's internal funding sources have been supplemented however by a substantial amount of grants-in-aid. Between 1978 and 1983 capital grants received by MassPort totaled almost \$44 million or approximately fifteen percent of total Massport capital investments. A similar percentage of grant funds are expected for fiscal years 1984 and 1985. These general financing arrangements, i.e., predominant use of retained earnings and revenue bonds, supplemented by grants-in-aid, are expected to continue indefinitely, with perhaps some reduction in the use of revenue bonds if interest rates climb.

MassPort's dependable stream of internally generated revenues has permitted it to pursue an expansive capital investment program. In addition, the dedication of a portion of MassPort's annual operating

surplus to a Maintenance Reserve Fund has permitted the Authority to adequately maintain its expanding capital stock. Overall, MassPort's investment program has provided essential support to the City's growing economy. It is hoped that a more stable labor environment and the completion of supporting highway investment will unlock the productivity of MassPort's ongoing investments in the Port of Boston. Boston and the entire region are however already receiving the benefits of MassPort's recent and planned investments at Logan Airport, Bird Island Flats, BOSCOM and elsewhere. The City of Boston also receives the benefit of MassPort's in-lieu-of tax payments which, for 1984, totaled \$4.9 million.

#### Massachusetts Convention Center Authority

By the end of 1982, renovation and expansion of the Hynes Auditorium had become a necessity if Boston was to increase or even maintain its share of an estimated \$8 billion/yr. national convention industry. At the time, the City simply did not have the resources to undertake the project. As a result, the State bought the Auditorium and created the Massachusetts Convention Center Authority (MCCA) to operate, renovate and expand it. The State has also provided the MCCA with a \$200 million bond authorization.

The preliminary plans for the new Hynes call for a doubling of the existing rentable space. It will also provide more flexibility in the use of that space. The total cost for the reconstruction is now estimated to be between \$150-160 million. Construction is scheduled to begin in April of 1985 and continue through the summer of 1987.

One of the main issues which the MCCA has yet to resolve is parking for the expanded Hynes Auditorium. There are numerous private parking garages in the area but it is unlikely that they will be able to handle the demand created by major conventions at the new larger Hynes. There are several nearby sites in the area that would be suitable for a new parking facility, but to date no firm plans have been made for the construction of such a facility.

Although the costs of rebuilding the Hynes Auditorium are high, the benefits are also great. The new Hynes is expected to substantially boost hotel occupancy rates, generate an additional \$32 million in State tax revenues, and produce thousands of new jobs in the City's and State's tourist industry.\*

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\* Kenneth R. Rossano, Chairman Greater Boston Chamber of Commerce, "Convention Center Vital to This State's Economy," Boston Herald, December 8, 1983.



### III. CAPITAL INVESTMENT ACTIVITIES OF THE UTILITIES SERVING BOSTON

#### Summary

Looking over Tables 33-35, and adding in the capital investments in Boston of NET (New England Telephone), a reasonable estimate of the average annual utility investment in Boston would be well over \$60 million. This is not including the \$50-75 million invested so far by Cablevision in the installation of its cable network. The aggregate level of future investment in Boston by the five utilities serving the City is likely to substantially exceed that of the recent past. The main categories of future utility investment in Boston are scheduled to include the renovation of Boston's sewer system by BWSC, the coal conversion of one or more oil fired power plants owned by Boston Edison, the completion of Cablevision's cable network, and the modernization of NET's cable and switching systems. Although there are few direct means of influencing utility investment plans in Boston, there are many indirect and informal ones. Investments of the magnitude and importance outlined in this section deserve a high level of attention.

## Introduction

Using a broad definition of the term, there are currently five utilities serving Boston, the Boston Water and Sewer Commission (BWSC), the Boston Gas Company, the Boston Edison Company, New England Telephone (NET) and Cablevision. Some may object to the inclusion of the BWSC with these other, private utilities, yet there are good reasons for this classification. All five of these organizations install and maintain an extensive capital plant underneath Boston's streets. These streets are continually being excavated in order to expand or repair the facilities of one or more of these organizations. In addition, the services which these utilities provide are among the most basic elements of modern urban life. Although in some cases, such as NET or Cablevision, they may also be providing quite new and innovative services. Finally, the capital investment plans of all these utilities strongly affects and is affected by major development trends throughout Boston. For these reasons BWSC and the four privately owned utilities are grouped together in the third section of this report. It is also for these reasons that the capital plans and investment activities of these five utilities must be considered as essential to any infrastructure planning effort in the City of Boston.

## The Boston Water and Sewer Commission

The BWSC operates and maintains Boston's water distribution and wastewater collection systems. In this capacity, the BWSC is responsible for planning and constructing improvements to these systems, as well as for setting rates and charges, at least sufficient to cover all capital and operating costs. Although, the BWSC is overseen by a

three-member Board of Commissioners appointed by the Mayor with City Council approval, the BWSC is essentially independent of the City government. The rates and charges set by the BWSC are not reviewed by any City or State agency, nor does the Mayor or any City agency have the authority to alter the BWSC's capital improvement program.

The lack of direct authority on the part of the Mayor to affect changes in BWSC's operations or plans does not mean that there is no coordination between the City and BWSC with respect to capital improvements. The BWSC is required by law to annually revise and update its three-year capital improvement program (CIP). Each year upon the completion of the draft CIP document, a public hearing is held in order to allow comment from the City's agencies and other interested parties. BWSC staff have indicated that the CIP is often changed in response to suggestions from the City's agencies. In addition, the BWSC, having formerly been a part of Boston's Public Works Department (BPWD), maintains ongoing communication with BPWD in order to coordinate sewer and water work with the City's street reconstruction activities.

It should be noted that since 1978 when the BWSC was formed as an independent corporation, capital investment in the City's water and sewer system has increased dramatically. From 1979 to 1983 capital expenditures by the BWSC averaged over \$7 million dollars per year, while the City of Boston in fiscal years 1975 and 1976 expended only \$1.8 million and \$3.2 million, respectively, on water and sewer capital improvements. For the period 1979 to 1983 BWSC has been most successful in following a program to relay or reline old water mains, thereby reducing leaks and breaks. (See Table 33A.) BWSC has also been engaged in a program to improve and expand its water metering capabilities.

Table 33A

## SUMMARY OF ESTIMATED CAPITAL EXPENDITURES OF THE BOSTON WATER AND SEWER COMMISSION 1979-83;

## FUTURE PLANS 1984-86

(Water Systems)

(\$000s)

	Neighborhood(s)	Past Expenditures				Future Plans			
		1979	1980	1981	1982	1983	1984	1985	1986
<u>Water System Capital Improvements</u>									
<u>Relaying and Relining of Pipes<sup>1</sup></u>									
	Central Boston	611	394	522	1,418	1,025	1,035		
	Dorchester, Mattapan	300	591	518	0	731	1,244		
	Charlestown	150	473	174	0	0	142		No neighborhood
	W. Roxbury, Roslindale	0	8	407	304	711	167		breakdown is
	Roxbury, Jamaica Plain	484	1,893	268	405	674	1,266		available.
	Hyde Park	0	15	326	329	0	143		
	Allston/Brighton	450	166	65	0	97	311		
	East Boston	1,035	914	218	76	86	262		
	South Boston	880	276	109	0	985	0		
		3,910	4,730	2,607	2,632	4,309	4,571	5,067	5,464
<u>Total Relaying and Relining</u>									
	Citywide	1,352	1,198	400	645	644	832	760	713
<u>Metering Improvements (Residential, Industrial, Public)</u>									
	Citywide	0	0	0	1,750	0	0	0	0
<u>Transmission System Improvements</u>									
		5,362	5,928	3,007	5,027	4,953	5,403	5,827	6,177
<u>Total Water System Capital Improvements</u>									

<sup>1</sup> Neighborhood breakdown of relaying and relining costs based on length of pipe planned for each neighborhood relative to total length of pipe and cost planned for each year.

\* Total relaying and relining estimates for 1982 includes \$100,000 of relaying not allocated by neighborhood.

Source: BWS Capital Improvement Program Documents 1979-81, 1980-82, 1981-83, 1982-84, 1983-85, 1984-86. The CIP documents outline planned expenditures, thus, actual BWS water system capital expenditures may differ from the above estimates.

Table 33B

SUMMARY OF ESTIMATED CAPITAL EXPENDITURES OF THE BOSTON WATER AND SEWER COMMISSION 1979-83;  
FUTURE PLANS 1984-86  
(Sewer Systems)  
(\$000a)

Sewer System Capital Improvements	Neighborhood(s)	Past Expenditures				Future Plans	
		1979	1980	1981	1982	1984	1985
Rehabilitation of Dorchester St. Interceptor	Dorchester	0	0	0	400	0	0
Main Interceptor Replacement	Central Boston	0	0	0	0	11,300	8,800
East Side Interceptor Replacement	Central Boston	0	0	0	0	6,399	12,488
(North & South)							9,203
Cleaning of West Side Interceptor	Central Boston	0	0	0	0	495	495
Albany St. Interceptor Replacement	Roxbury, Central	0	0	0	0	0	0
Construction of Mt. Vernon St. Sewer	Central Boston	0	74	1,800	1,800	0	270
Total Rehabilitation and Replacement of						0	0
Major Sewers and Interceptors		0	74	1,800	2,200	18,194	21,783
Construction and Rehabilitation of Overflow Citywide		0	0	0	0	1,072	0
Outlets and Pumping Stations							0
Separation of Combined Sewer Systems	Citywide	667	1,098	123	156	1,452	2,805
Increased Sewerage System Capacity	Citywide	150	0	480	325	1,964	2,400
Contingency Replacement & Minor Projects	Citywide	333	450	870	117	180	2,592
Total Sewer System Capital Improvements		1,150	1,622	3,273	2,798	22,682	26,988
Construction of New BWSC Operations Center		0	0	0	0	2,800	400
Total Water and Sewer System Capital Improvements by BWSC		6,512	7,604	6,280	7,825	30,885	33,210
(Water Systems Totals from Preceding Table)							25,247

Funding Analysis for Total BWSC Capital Investments  
 1979-83 Federal EPA = 6,000 1984-86 Federal EPA = 38,445  
 (\$000a) State DHP = 1,320 (\$000a) State DHP = 9,610  
 BWSC = 16,985 BWSC = 40,527

Source: BWSC CIP Documents 1979-81, 1980-82, 1981-83, 1982-84, 1983-85, 1984-86. The above estimates of investment attempt to account for delays and cancellations of sewer system projects, however actual expenditures may differ from the above estimates.



These two programs have not only improved water service in Boston but have also reduced the water purchases and increased the water service revenues of BWSC. The financial benefit of these programs to the BWSC is certainly one reason why they have been so diligently pursued. The current CIP of BWSC envisions a continuation of the Commission's water main relaying and relining efforts, as well as continued improvement of its residential metering equipment.

The success of the BWSC's water system improvement program is mirrored by the difficulty it has encountered in carrying out many needed improvements to Boston's sewer system. Many urgent projects, such as the replacement of Boston's main interceptors, the separation of sewers and storm drains and the improvement of combined sewer overflow (CSO) facilities have been repeatedly delayed--often as much as five years. These delays are by no means solely the fault of the BWSC; the EPA and the MDC are also partly responsible, in that they have been extremely slow in developing, improving and implementing a comprehensive CSO reduction and treatment plan for the older communities in the MDC service area. Irrespective of the balance of blame however, it is the residents of Boston and other harbor communities which suffer from delays in reducing the pollution generated by the overflow of combined sewer and storm water systems.

As can be seen from Table 33B, the estimated annual sewer system capital expenditures of BWSC for the period 1979-83 are only one-third of the average annual capital expenditures programmed for the sewer system in the period 1984-86. This sharp increase reflects the large backlog of BWSC sewer system improvements. The table also shows that even with continued federal and state assistance, a substantial portion

of the BWSC's CIP will have to be financed by the Commission's own revenues or revenue bonds. With the BWSC planning a 250 percent increase in the annual amount of capital investment which must be supported from its own revenues, increases in water and sewer charges can be expected.

The managers of the BWSC have to be commended for their substantial success in addressing the problems of an aging and, at one time, neglected water and sewer system. The BWSC's past capital investments have cut water system losses by an estimated 25 million gallons. Although the BWSC has had less spectacular success in correcting some of the major problems with Boston's sewer system, the Commission has managed to reduce the volume of new sewage being discharged into Boston Harbor from the City's sewage overflow outlets. The BWSC's goal is to eliminate all untreated sewage flowing from the City into Boston Harbor by 1988. The Commission's current three-year CIP reflects a portion of the financial costs of meeting that goal. In addition to increased financial resources, a substantial increase in the level of cooperation and agreement between the BWSC, the MDC and the EPA will also be required.

It is also essential that the City continue to work closely with the BWSC so as to reduce the cost of sewer system reconstruction and to insure that water and sewer capacity are sufficient to meet growing demand. The BWSC is currently engaged in two important studies in which the involvement of the City is absolutely essential. The first, known as the Downtown Study, will assess the adequacy of Downtown Boston's water, wastewater and drainage capacity in light of continued development. The second, referred to as the Drainage Study will

evaluate the wastewater and storm drainage systems of the City as a whole. All parties will benefit from the City's ongoing participation in these studies and the capital improvements that result from them.

#### Boston Gas

The Boston Gas service area encompasses not only Boston but all or part of 73 other cities and towns. The physical plant of Boston Gas includes a network of 5,700 miles of gas mains and approximately the same mileage of smaller customer service pipelines. Boston Gas estimates that the City of Boston comprises about ten percent of the Company's service area, but the City contains nearly 20 percent of the Company's total pipe mileage and 28 percent of its customers. Apart from gas mains and service pipes, Boston Gas' capital facilities in Boston consist of customer service offices in Roxbury and Jamaica Plain, a Liquified Natural Gas Plant in Dorchester, an Operations Center in West Roxbury and the company's downtown corporate headquarters. In addition, there are other Boston Gas facilities outside of Boston, particularly two LNG plants in Salem and Lynn and an SNG plant in Everett, which contribute significantly to the services which the Company provides to its Boston customers.

Between 1978 and 1982, Boston Gas invested \$21.5 million in its Boston capital plant. As identified in Table 34, forty percent of these expenditures were for gas mains and another forty percent for customer service pipes. The remaining twenty percent was spent on meters and miscellaneous items. In general, most of Boston Gas' recent investments in the City have been for repair, replacement and relocation of mains, meters and service pipes. With the exception of expanding gas service

Table 34

CAPITAL EXPENDITURES BY THE BOSTON GAS COMPANY IN THE  
CITY OF BOSTON, 1978-82  
(\$000s)

Type of Investment	1978	1979	1980	1981	1982
Gas Mains	1,017	2,179	2,829	2,226	660
Service Pipes	1,746	2,310	2,032	1,826	1,094
Meters	57	95	66	80	72
Other	906	863	194	944	347
	3,726	5,447	5,121	5,076	2,173

Source: Boston Gas Company response to BRA Infrastructure Survey Questionnaire.

to the Boston Marine Industrial Park in 1980, Boston Gas' investments in new capacity have been relatively small. Future investments in Boston are expected to be similar in amount and type to the investment record of the recent past.

Major new construction projects in Boston, such as South Station, Copley Place or the Orange Line relocation will very often require some investment on the part of Boston Gas in order to upgrade gas service to the new development and/or to relocate existing gas mains. To improve the efficiency and reduce the costs of gas-related investments which new construction can require, Boston Gas regularly contacts public agencies, as well as design and engineering firms. The intent is to keep abreast of redevelopment plans and to request that the responsible public and private agencies "remember the Gas Company" throughout the planning process.

In addition to capital investments by Boston Gas itself, gas customers in Boston have benefited from increases in the capacity of the gas pipelines which provide the majority of Boston Gas' supplies. Boston Gas is also pursuing pipeline projects of its own which would increase and diversify its peak supply capacity.

Two somewhat experimental gas supply options from local sources that deserve mention are tapping the methane produced from sewage treatment plants and sanitary landfills. Boston Gas has performed some preliminary investigation of this first option with respect to the MDC's Nut Island Treatment Plant and concluded that this supply option is presently not cost-effective. The second possibility, that of tapping into the methane from sanitary landfills has not been investigated by



Boston Gas although this supply source has been successfully utilized by other gas companies.

#### Boston Edison

Boston Edison supplies electricity to over eighty cities and towns in eastern Massachusetts. Boston Edison presently maintains four generating stations in South Boston, two of these supply base load power, one is a peak load station and the fourth is a much smaller, experimental wind generator. The Company also has ten substations scattered throughout the City. The final major component of the company's Boston capital plant is its transmission and distribution lines which lie beneath Boston's streets. It is important to realize that modern electric supply and distribution grids such as Boston Edison's operate as a unified system. Consequently, Boston Edison's generating stations and major transmission lines outside of Boston are also important elements in supplying electricity to Boston.

Similarly to Boston Gas, Boston Edison does not maintain a record of its investment specifically in Boston. However, an unpublished study performed by the Company for years 1981 and 1982 indicated that Boston Edison invested approximately \$38 million per year in its Boston capital plant in each of these two years. Given the interconnected nature of the Edison grid, it is useful to supplement these Boston specific investment figures with relevant information on aspects of Boston Edison's system-wide investments. Table 35 shows Boston Edison's investments in the City for 1981 and 1982 together with its systemwide investments by year in production and transmission plant from 1978 through 1982. Some perspective is provided to these systemwide

Table 35

SELECTED INFORMATION ON BOSTON EDISON CAPITAL INVESTMENT,  
1978-1982  
(\$000s)

	1978	1979	1980	1981	1982	1983
<u>Capital Investment In Boston</u>						
Maintenance of Distribution and Street Plant				4,000	4,000	
Maintenance of Generation and Substation Plant	NA	NA	NA	12,000	12,000	NA
Additions and Replacement of Distribution and Street Plant				15,000	15,000	
Additions and Replacement of Generation and Substation Plant				7,000	7,000	
Total				38,000	38,000	
Construction of New Boston Service Center					8,500	8,500
<u>Systemwide Electric Production and Transmission Investment</u>						
Additions to Electric Production Plant	57,340	28,313	82,103	27,773	81,945	
Additions to Electric Transmission Plant	12,557	855	1,818	115	1,612	
Total Production and Transmission Investment	69,897	29,168	83,921	27,888	83,557	
Additions and Replacement of Steam Distribution Plant (Boston)	1,340	510	1,097	NA	NA	

Sources: Boston Edison response to BRA Infrastructure Survey Questionnaire, and annual Boston Edison submissions to MDPU.

investments by realizing that Boston customers utilize forty percent of Boston Edison's total sales. Moreover, this percentage is likely to increase by several points over the next few years as development in Boston continues. Copley Place alone represents about one percent of Boston Edison's average load.

Future investments by Boston Edison which will affect the company's Boston customers include the proposed conversion of the Company's South Boston power plant from oil to coal, the installation of several new transmission lines in the Boston area and the scheduled replacement of the Government Center substation. The costs and scheduled completion dates of these projects is shown in Table 36. Another area of future investment shown in Table 36 is the relocation of transmission lines and substations along the proposed routes of the Central Artery Depression and Third Harbor Crossing.

Although the planned conversion of the Boston Edison's plant from oil to coal could have some adverse environmental impacts, this project will help to diversify Boston Edison's supply sources. Presently oil-fired plants and the Pilgrim nuclear plant supply virtually all of Boston Edison's base load capacity. The construction of a waste-to-energy plant by the City of Boston or a private firm would also help to diversify Boston Edison's supply sources. Apart from coal conversions, Boston Edison is not presently planning any major investments in its production plant. Boston Edison does anticipate a supply deficiency in the mid-1990s but expects to alleviate this deficiency through increased purchases of Canadian hydroelectric power. The company is also pursuing a number of conservation and load management programs aimed at reducing the need for new generating capacity.

Table 36

## PLANNED BOSTON EDISON CAPITAL INVESTMENT PROJECTS IN OR AFFECTING BOSTON

	Estimated Cost (\$000s)	Scheduled Completion Date
Coal Conversion of Power Plant in South Boston	600,000	1986-88
Mystic Plant to Lincoln St., Brighton	11,500	1988
345 kv Transmission Line		
Hyde Park-Dewar St., Dorchester	8,232	1985
115 kv Transmission Line		
Replacement of Government Center Substation	10,000	1991
Relocation of Transmission Lines and Substations <sup>1</sup>	30,000	Not yet scheduled
for Central Artery Depression/Third Harbor Crossing		
Total	659,800	

<sup>1</sup> Boston Edison will be seeking federal and state funding for these relocation costs.

Sources: Boston Edison response to BRA Infrastructure Survey Questionnaire and Energy Facilities Siting Council list of approved projects.

In addition to supplying electricity to Boston residents and businesses, Boston Edison maintains a steam system which provides heat and processes steam to many downtown buildings. Use of the system by downtown businesses has been dwindling in recent years due to competition from other space heating systems. Nevertheless, as Table 32 shows, Boston Edison has invested at least \$3 million in its steam distribution system from 1978 to 1980.

#### New England Telephone

As its name implies, New England Telephone (NET) furnishes local telephone service not only to Boston but throughout Massachusetts, Maine, New Hampshire, Rhode Island and Vermont. As of January 1, 1984, NET was divested from AT&T and now forms part of the New York-New England Exchange. The NET telecommunications system provides its customers with local phone and data transmission services and also provides the link to the national and worldwide telecommunications network.

New England Telephone's capital assets in Boston include telephone lines, pay phones, switching systems, buildings and computer systems. Between 1978 and 1982, NET invested over \$55 million in its Boston capital plant, increasing its total Boston capital assets from \$434 million to \$489 million. In general, these investments were made to provide for increased local and toll service as well as to modernize existing plant. For example, over \$10 million was expended during this period for the refurbishing of NET's 245 State Street Building.

Capital expenditures in Boston for 1983-85 are currently budgeted by NET at about \$90 million. A portion of this budgeted investment will



be used to replace several of the electro-mechanical Central Offices still existing in Boston with more sophisticated digital or electronic systems. These new systems will cost approximately \$5-6 million each and will provide customers with improved, more versatile service. The remainder of NET's capital investment through 1985 will be devoted to meeting new growth requirements.

Over the longer term, as the copper telephone cables in Boston approach their capacity limitations, it is likely that NET will replace them with fiber-optic cables. The fiber-optic cables would have greater and faster voice and data transmission capacities. In addition, due to their greater capacity, the fiber-optic cables would require less street excavation work than existing copper cables. No cost estimations are presently available from NET regarding the cost of installing fiber-optic cables throughout Boston. However, NET has installed these cables at a total cost of \$30 million in a loop that runs from Brockton through Boston, north to Lowell and west to Rte 128. In Boston, these new fiber-optic cables tie together four of NET's downtown offices, carrying local and toll calls sent between these locations.

#### Cablevision

Cablevision is the newest company to be installing infrastructure under Boston's streets. In 1982, the company was awarded the franchise to provide cable television service to all residents and businesses in Boston who were willing to pay for it. Actual construction of Cablevision's capital plant began early in 1983. The target completion date is the end of 1984. To date, approximately forty percent of the capital plant is in place, with some 35,000 subscribers presently

receiving service. By the time installation of the cable system is complete, Cablevision's capital investment in Boston is expected to top \$100 million. The new cable system will eventually provide the option of expanded television service to all of Boston's households. It also has the potential to be used for data transmission and two-way communication services.

When bids were first being accepted for Boston's cable TV franchise, there was some discussion of the possibility of the City installing and owning the cable system itself. Presumably, Cablevision or some other firm would then have been permitted to lease the system from the City. This option was obviously not pursued by the City at the time, but it is surfacing once again with regard to a downtown communications network. As previously discussed, there are presently no firm plans for such a network but market and feasibility studies have been proposed. If significant demand for inter-office communications outside of the New England Telephone network is projected, the City may step in to build and maintain a downtown system in order to avoid duplicative street cuts. Since Cablevision has yet to install its cables in the downtown, it may be feasible to coordinate the two activities, with Cablevision ultimately leasing space in the City's downtown network.

It should be emphasized that the technical, legal and economic issues surrounding a downtown communications network have not yet been fully investigated. The ultimate structure and even feasibility of such a network will be determined by the results of these investigations. Nevertheless, decisions will need to be made soon if the City's efforts are to be coordinated with the installation of cable service downtown.



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